Router Solutions
The Evolution of Electronics Manufacturing

User Manual

BOM connector

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Introduction to BOM Connector™

1 BOM Connector™ Overview

BOM Connector™ is a bill-of materials preparation, handling and quoting tool for EMS and OEM electronic manufacturers.

Dealing with BOM data is one of the biggest headaches faced by both OEM and EMS manufacturers. EMS manufacturers are confronted daily with a wide variety of BOM formats and ever-changing content. Usually the only rule that applies is “there are no rules”. Matching customer parts to internal parts, comparing different BOM revisions and communicating with purchasing are too often done manually, which is mistake-prone and can easily take hours or even days of effort. Preparing accurate quotations means constantly checking for current component pricing and delivery conditions.

A good BOM tool should help with all these tasks. BOM Connector™ is exactly that tool!

One of the key features of BOM Connector™ is to help EMS providers speed up the process of preparing customer BOMs. This process normally involves

a) Reading in the myriad formats and contents received into a standard framework

b) Finding the proper internal part numbers (IPN) to use for the various customer part numbers (CPN) in the BOM by searching through the company’s ERP parts database

c) Exporting the results into a standard format.

BOM Connector™ can also assist EMS providers to create quotes much faster and more accurately by integrating the various pillars required for the quoting process:

a) customer BOM b)

b) internal ERP system

c) distributor catalog

d) online pricing portals such as Octopart™ and Digikey and, last but not least

e) operator knowledge and experience.

The more BOM Connector™ is used, the "smarter" the system becomes.

In addition, both EMS and OEM providers benefit by using BOM Connector™ to directly link between their ERP system and various process engineering and shop floor management tools, such as the MSS suite of tools from the Mentor Graphics Valor Division.

Here are the primary functions of BOM Connector™:

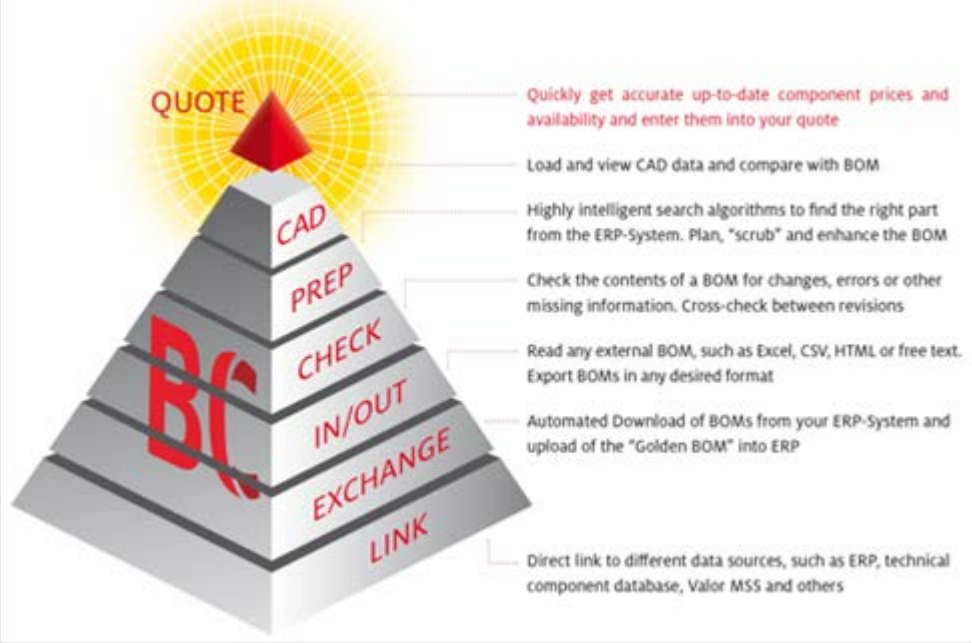
1. Read in a customer BOM, clean it up "scrubbing", and use the various search methods, such as SmartSeach, CIS Search, MPN Search and others to find the best matching part in your ERP system, in order to generate what we call a "Golden Manufacturing BOM" for further processes. This is a key feature for EMS suppliers, as it is often one of the most time-consuming and error-prone tasks of the manufacturing process. When used early on, in the quoting department, it can substantially reduce the time per quotation, thus having a direct effect on the company's "bottom line".
2. Use the advanced quoting features to find the best possible price, either through a search of your company's distributor list, or a search of Online portals such as Octopart™. These prices can be stored for future use.
3. During the manufacturing process, BOM Connector™ can provide one-click integration of the project's current BOM into your process engineering and shop floor tools, such as the MSS suite of tools from the Mentor Graphics Valor Division. This ensures that an incorrect or no longer current BOM does not end up in the manufacturing process.
4. Compare different versions of BOMs, this includes the following scenarios:
    - New customer BOM with old customer BOM
    - New customer BOM with the current BOM stored in the in-house ERP system (i.e. the 'golden' BOM)

- New Customer BOM with the BOM stored in Valor MSS
- ERP BOM with Valor MSS BOM

This is a huge help in determining revision changes and is another key feature for EMS suppliers.

5. Provide basic CAD viewing for early phases of the manufacturing process such as quoting or initial job review.
6. Extract information from the CAD file and insert it into the working BOM. Since often there is information, such as technology, side and station, which is not included in the original BOM.

These functions are handled by these program modules


QUOTE
CAD
PREP
CHECK
IN/OUT
EXCHANGE
LINK
BC
Quickly get accurate up-to-date component prices and availability and enter them into your quote
Load and view CAD data and compare with BOM
Highly intelligent search algorithms to find the right part from the ERP-System. Plan, "scrub" and enhance the BOM
Check the contents of a BOM for changes, errors or other missing information. Cross-check between revisions
Read any external BOM, such as Excel, CSV, HTML or free text. Export BOMs in any desired format
Automated Download of BOMs from your ERP-System and upload of the "Golden BOM" into ERP
Direct link to different data sources, such as ERP, technical component database, Valor MSS and others

2 System Requirements and Installation

2.1 Hardware System Requirements

BOM Connector™ is a true client-server system with a direct link to the ERP system at its heart. Therefore, you will need a Windows Server drive with full read rights to the internal ERP system. A client PC with at least 100MB free disk and 1280 X1024 resolution (recommended - 1024x768 will also work) and a TCP/IP connection (min. 2MBit) to the ERP Server.

2.2 Installing BOM Connector™

Because BOM Connector™ is a client-server multi-user system, users in the different departments - quoting, component engineering, process engineering, production, etc. - all to access the same database and settings.

Therefore, there are two steps to installing BOM Connector™:

1. Copying the software to the Server
2. Configuring the clients.

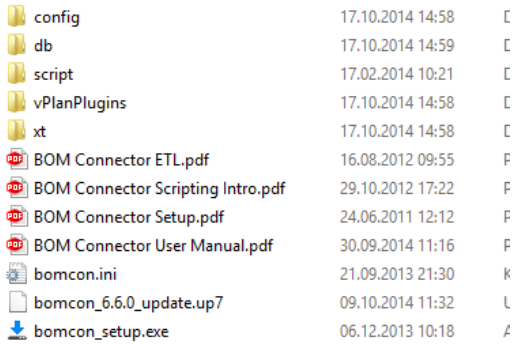
Step 1: Installing on the server

Installing BOM Connector to the server is very simple.

Just create a folder with any name you wish.

For example: \\servername\BOM-Connector

Now simply copy the entire contents of the CD here. Your directory will now look like this:



That's all there is to it.

Step 2: Configuring the Clients

The only thing to keep in mind here is that all clients you configure must clients have access to the directory on the server you copied BOM Connector to.

To configure a client simply go to the BOM-Connector server directory (from the client itself) and run BOMCON_SETUP.EXE.

The installer will create a local instance under:

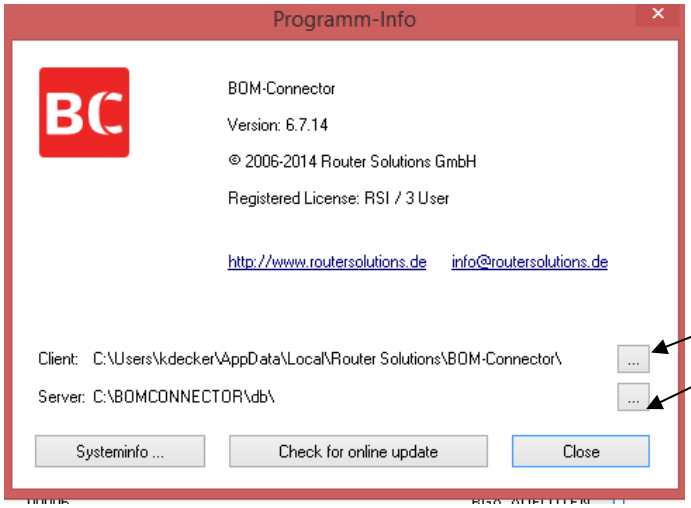
C:\Users\MYNAME\AppData\Local\Router Solutions\BOM-Connector\

where: MYNAME is your user name in Windows.

It will also place a BOMCON icon on the desktop:

You can now start BOM Connector on this client. When in BOM Connector, you can verify that all "pointers" to the directories are correct by clicking on

and then INFO&UPDATE. This brings up the following dialog:



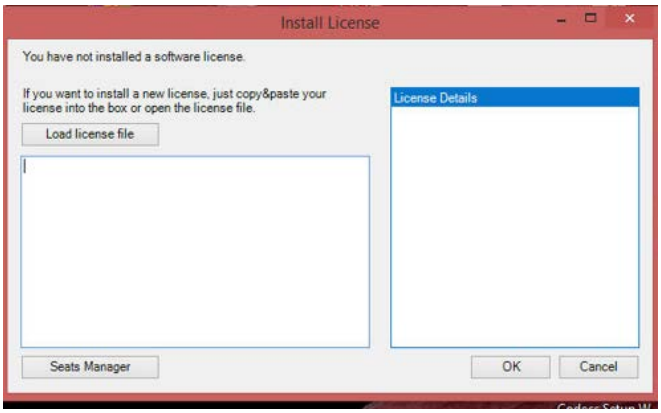
Click here to go to the client directory in Explorer

Click here to go to the server directory in Explorer

Note:

If you receive the message below when starting BOM Connector, simply cut-and-paste the string you received via email into the empty window area illustrated to the right by the cursor position.

No further action on licensing is currently required.


Install License
You have not installed a software license.
If you want to install a new license, just copy&paste your license into the box or open the license file.
Load license file
License Details
Seats Manager
OK
Cancel

3 BC-Link

A direct ERP data source link is the “backbone” of BOM Connector™ and gives direct access to all necessary ERP data. BOM Connector™ BC-LINK includes a “connection wizard” that allows it to connect dynamically to nearly every ERP-System, including all SAP versions. ERP data is brought smoothly into the BOM Connector™ backend database, so searching and other tasks can be performed without effecting ERP-System performance.

BOM Connector™ has been tested with many ERP systems, including SAP, Navision, ProAlpha, Infour, Baan, Wise and others. However, any ERP system that either uses SQL, ORACLE, Access, or an ODBC/OLEDB compatible database structure will work.

The connection to the ERP system is provided by Router Solutions as a standard part of the software delivery. It is known as an "ETL" (which stands for "extract - transform - load"). As the name implies, data is extracted from the ERP database, transformed to make it better readable and loaded into a BOM Connector™ "backend" database. Having this backend database means that searches are done "offline" from the ERP system and thus will not affect system performance. It also gives you one central BOM Connector™ database to store the mapping between customer part numbers "CPN" and internal part numbers "IPN", as well as customer-specific settings. The ETL is adapted specifically for each customer's ERP system and provides the crucial link between BOM Connector™ and your material data.

The ETL has been pre-configured on your system and, if automated, will take place all in the background.

To launch the connection manually, see chapter 4.1 Start BOM Connector™ and update from ERP., page 10

3.1 Required and Recommended ERP Data Fields

Your ERP system should have the following fields defined:

- Customer Name (recommended)
- Customer Number (recommended)
- Internal (i.e. "ERP") Part Number, or "IPN" for short (required)
- ERP Description Field or Fields (required)
- Manufacturer Part Number, or "MPN" for short (recommended)
- Manufacturer Name (recommended)
- Price (recommended)

3.2 Optional Data Fields

There are no limits to the additional fields you can access in your ERP system and bring into BOM Connector™ via the ETL.

Here are some very useful ones:

- Additional prices
- Bulk quantity prices
- Storage location
- Current supplier
- Additional MPN 1-x
- Additional Manufacturer Name 1-x

- Process

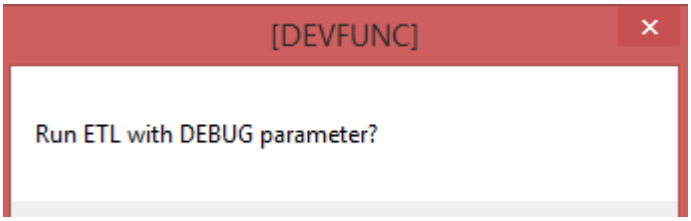
Since a well-designed ERP link is crucial for the success of BOM Connector™ this should we discussed in depth with Router Solutions software specialists.

3.3 Configuring the ETL

When you have launched BOM Connector you can configure the ETL by holding the CTL key and choosing

from the Action Menu.

You will then be asked if you want to run in DEBUG mode:



Answer with YES and hit SETTINGS to enter the configuration menu.

3.4 Using BC-Link for SAP

A big plus for SAP users – BOM Connector™ interfaces via standard scripts and “BAPI” remote function calls, so it is always compatible with future versions and no additional costs are incurred on the SAP side.

4 Using BOM Connector™

4.1 Start BOM Connector™ and update from ERP

Invoke the BOM Connector Exe by clicking on the

icon or via ALL Programs – BOM Connector.

Note: BOM Connector™ should automatically starts in English for non-German systems. If this is not the case, simply add a /1033 (for language code "English") in the start properties:

"C:\Users\myname\AppData\Local\Router Solutions\BOM-Connector\bin\bomcon.exe" /1033

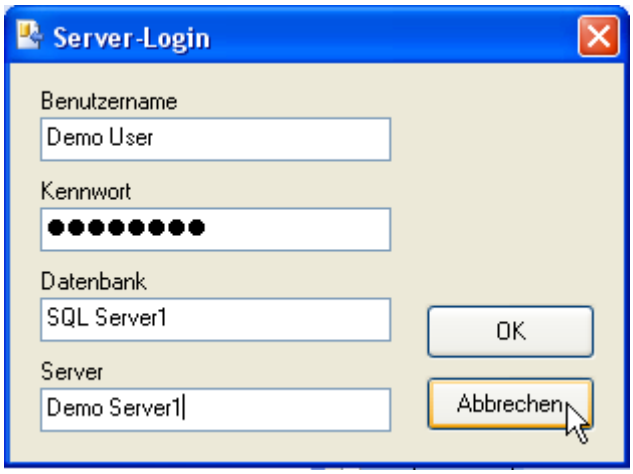
Where "C:\Users\myname\AppData\Local\Router Solutions\BOM-Connector\bin" is the directory from which you are starting BOM Connector™.

Note: This icon should have been created by the installer automatically.

When you start BOM Connector™, the ETL is automatically invoked and the backend database is updated from the current ERP information.

If you have been working with BOM Connector™ for many hours and want to update (i.e. "sync") with your ERP system, simply click on the icon “Update Part Data” in the action menu.

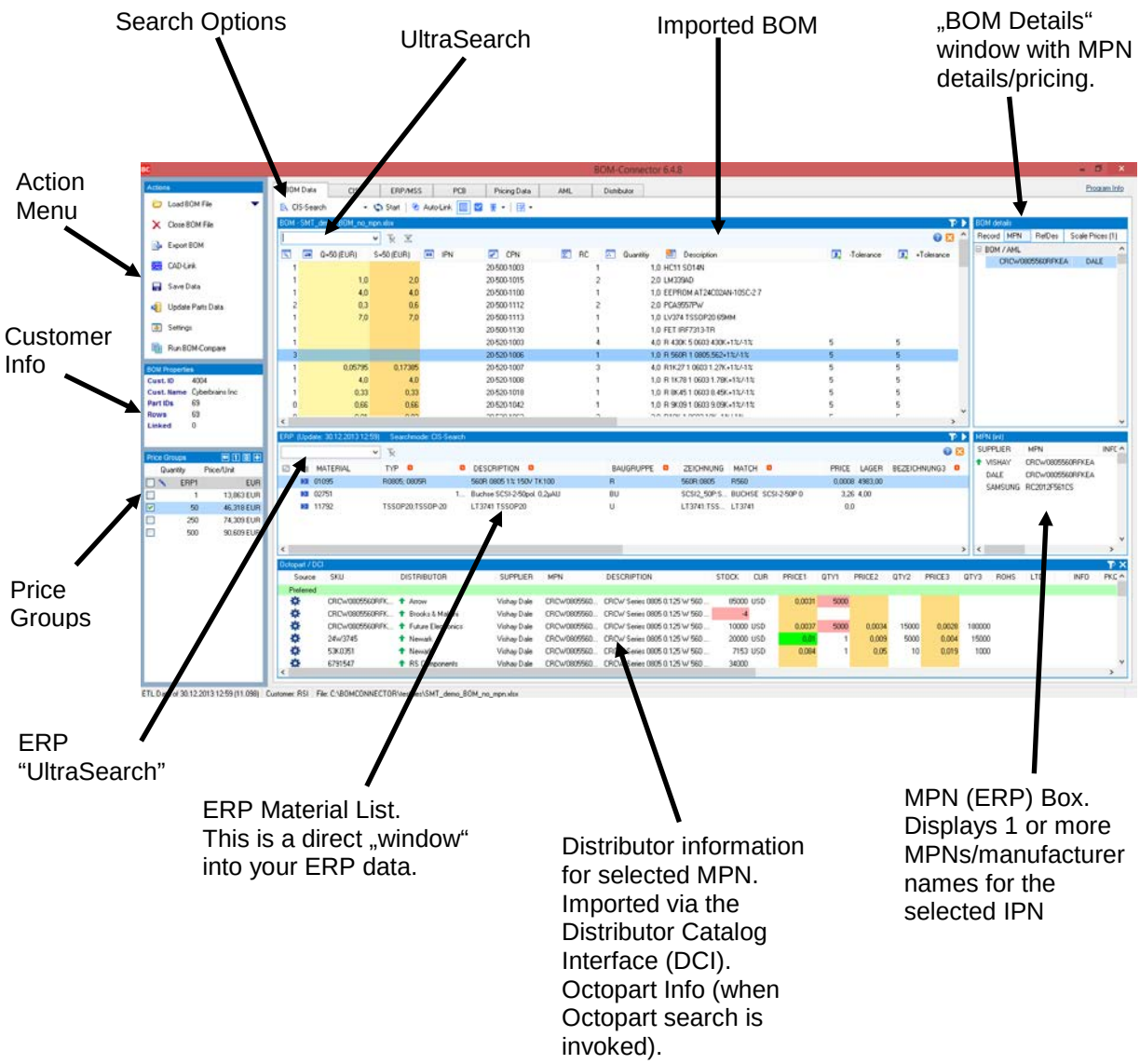
Depending on the ETL, a login might be required.



This will vary from customer to customer, but here is an example.

4.2 The user interface

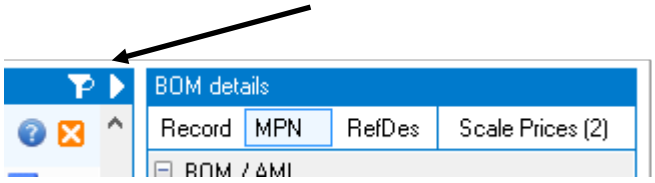
Particular emphasis has been made to keep BOM Connector™ easy to use. We at Router Solutions have chosen the standard "tabs" approach, in order to maximize screen utilization. Each operation group is located on a specific tab. The next page contains a complete overview of the BOM Connector™ user interface.


Search Options
UltraSearch
Imported BOM
„BOM Details“ window with MPN details/pricing.
Action Menu
Customer Info
Price Groups
ERP “UltraSearch”
ERP Material List. This is a direct „window“ into your ERP data.
Distributor information for selected MPN. Imported via the Distributor Catalog Interface (DCI). Octopart Info (when Octopart search is invoked).
MPN (ERP) Box. Displays 1 or more MPNs/manufacturer names for the selected IPN

All windows are re-sizable and, with the exception of the BOM and ERP windows, can be turned on/off at any time.

To resize, simply "grab" at the edge horizontal or vertical edge of a window. The cursor will change form to a double-arrow. Now, while holding the mouse down, "slide" the window up-down or left-right. Release the mouse button when finished.

To “hide” the BOM DETAILS window, you can use the arrow to the left of it.



Click on the arrow once with the window on and the window turns off.

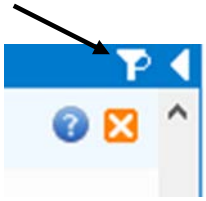
Click on the "reversed arrow" and the window turns on again.

You can also use the icon. Click here and a drop-down displays:

Simply, de-check the window you want to turn off, and check the window you want to turn on. It is easy!

4.2.1 Ultra Search

To turn on/off the “Ultra-Search”, a Google-like Search Window, click the “Filter” icon:



Use UltraSearch to quickly find parts either in the BOM or the ERP system. Here you can type in any search string, just as “100K 0805 1%” in any sequence.

You can also use “placeholders”. For example:

- “*” followed by nothing or by one or more characters acts as a wildcard
- “?” followed by a single character
- “#” followed by a single number

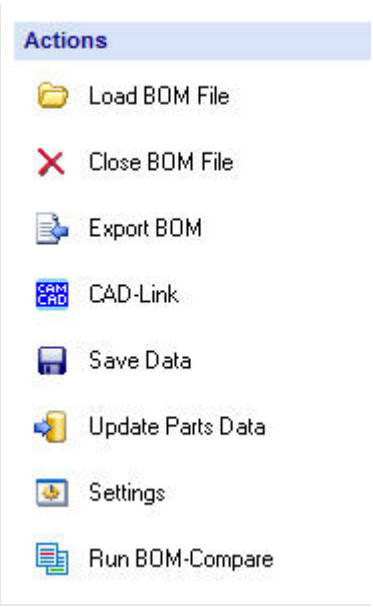
A “space” acts as a typical AND command. If you actually want to search for a “space” then use an underscore “_”. This will combine the two strings.

To make an exact search, use quotation marks. For example “R1” will only search for R1 and will not show R11, R12, etc. If you simply type in R1 without quotes, then everything starting with R1 will be displayed.

You can also turn on UltraSearch with CTRL-F and turn it off with SHIFT-CTRL-F.

The search engine looks through all fields and displays them. If you click: in the BOM window, then it will search through BOM and ERP simultaneously. See chapter 5 BC-IN/OUT, page 14 for a concrete example.

4.3 The Action Menu



With **Load BOM File** you can read in any CSV or XLS file. This is usually the first step for an EMS - reading in the customer BOM file. The file must contain at least Reference Designators or Part numbers (IPN) and have at least one description field.
Close BOM File removes the currently loaded BOM file from memory, to let you read in a new one. *Note: reading in a new BOM will erase the existing BOM from memory.*
Export BOM let you export your result (i.e. Golden Manufacturing BOM into different formats, such as XLS, CSV, HTML, or, for SAP users, a direct SAP project creator. The exported BOM can be "cumulative" or "flat".
CAD-Link lets you open a .CCZ file for CAD viewing and cross-link between BOM and CAD. When you load a CCZ file, the attributes contained in the file will be added into columns in your BOM. This lets you compare the contents of the BOM with information in the design.
Save Data is used to store your settings (i.e. the correlation between customer part number and your internal ERP part number) as well as your user attributes into the so-called CIS (customer info set)
Update Parts Data will run the ERP link, in order to update the BOM Connector™ database with your current ERP data. *Note: in a network-based client-server environment, this needs to occur from the server-installed BOM Connector™*
Run BOM Compare this function lets you read in two BOMs and compare them.

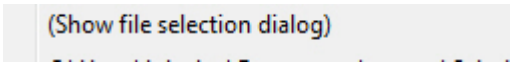
5 BC-IN/OUT

Once you have started BOM Connector™, the first step is to read in your BOM.

The BOM Import feature is part of the BC-IN/OUT module and is standard part of every BOM Connector™ configuration.

Click on LOAD BOM DATA in the action menu.

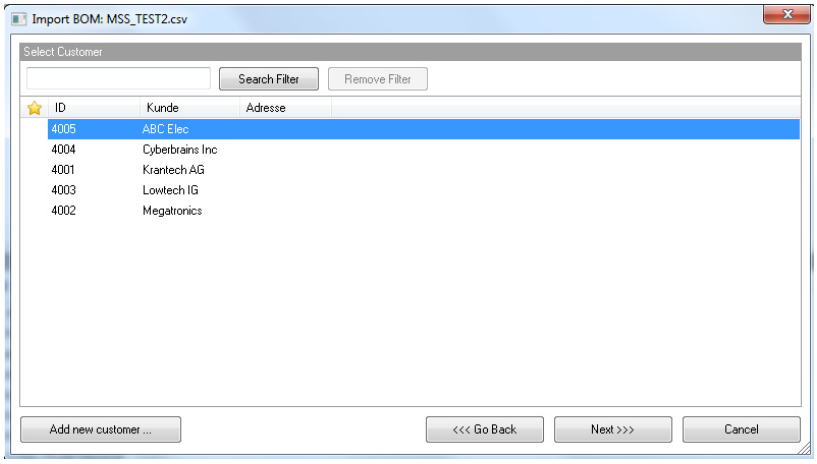
If you have been working with BOM Connector™ for some time you will see a list of the last 16 (depending on resolution) BOMs you read in.

To choose a new BOM select 

or a directory in the second half of the suggestion list.

Browse to the BOM file (CSV or XLS file) that you want to read in. A demo file is included with the system. It is called MSS2.CSV Load this file.

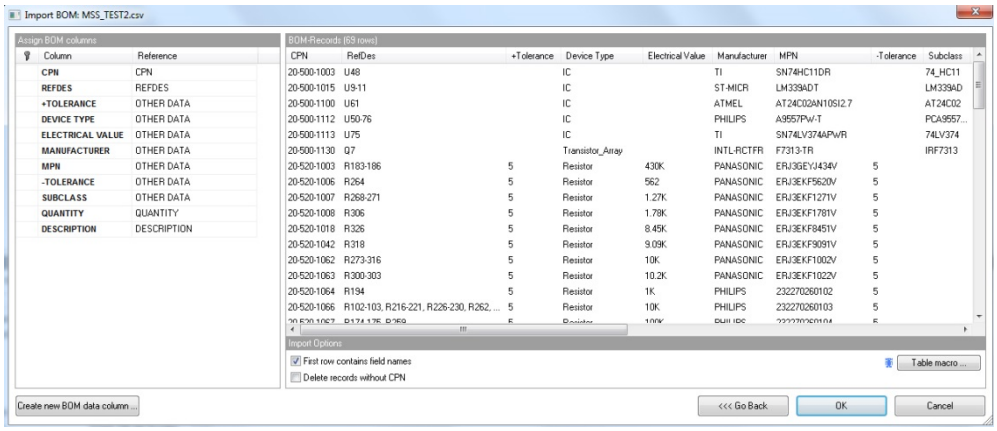
You will now see a screen with a list of customers.



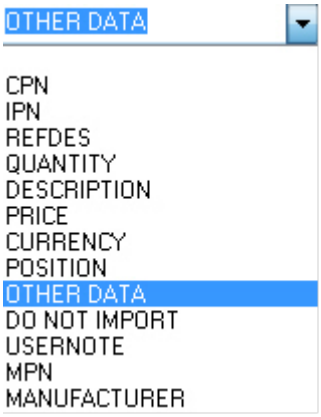
The list of customers is part of the BOM Connector™ concept of "Customer Info Set" (which we will refer to as CIS throughout this manual). If your ERP system has “CIS” information built into it, and if this information was properly brought in by the BC-LINK module, you will see a list of your customers. This is done automatically through the BC-LINK “ETL” (see chapter 3.3 Configuring the ETL, page 9). If the ERP does not include contain customer information, or if this was not implemented in the ETL, you can use BOM Connector™ to administer customers. Simply choose ADD NEW CUSTOMER and create as many as you wish.

The demo system includes a small CIS, which you see here. Choose your customer. For the demo BOM, choose Cyberbrains. It is very important for the future that you choose the proper customer for each BOM. Many steps that you perform, such as mapping the BOM fields, linking IPN to CPN, etc. will be saved to the customer name.

Once the BOM is loaded, you can assign BOM fields to field types with BOM Connector™ will understand.



Available field types are:



Customer Part Number (i.e. the customer's part number)
Internal Part Number (i.e. "your" part number)
Reference Designators (i.e. "U1", "R1", etc.)
Quantity* (see below)
Description - (at least one field needs to be assigned this)
PRICE - (only required for BOM which contain a price)
Currency (only required for pricing BOMs)
Position field
Assigning this means "import this column as is with the same name"
Assigning this means "do not import this field"
This is a special field type with notes that will be stored in the CIS
Manufacturer Part Number
Manufacturer Name

QUANTITY: this is the field claimed containing the quantity. BOM Connector™ will add a field "RC" which is a "reference count" (i.e. a count of all the entities contained in REFDES for that particular CPN). This allows you to perform a compare.

PRICE: price in the BOM

If the names in the BOM are similar, these will be assigned automatically. Otherwise, you will need to use the drop down menu for this. When you click on a field in the list, that field will be displayed in the preview area to the right.

Note: to use the preview area effectively, it might be necessary to expand its size. "Drag" the window by clicking and holding the mouse on the lower-right corner

In addition, you can enter a name for the field directly into the box by clicking on it:

and then typing:

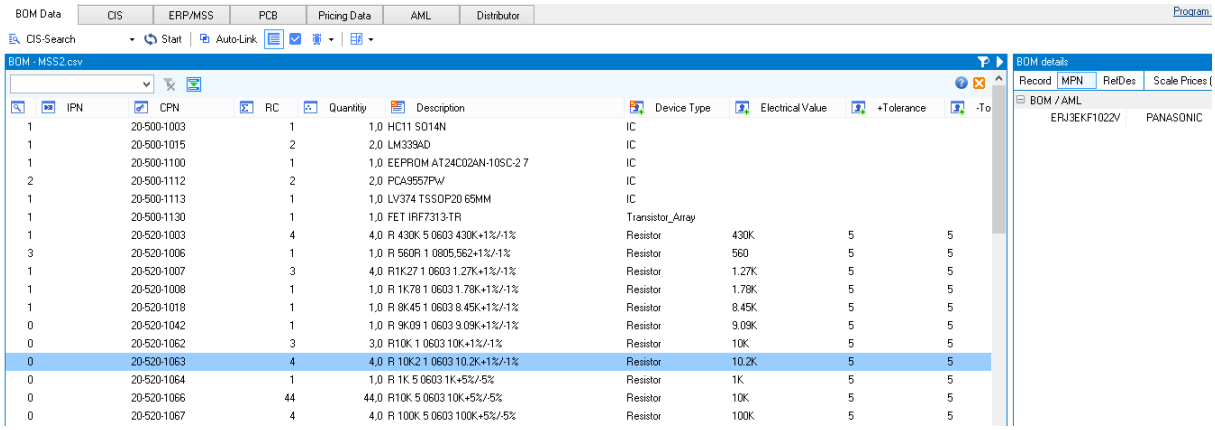
The mapping of BOM field names to BOM Connector™ field types, as well as these user-defined field names will all be stored per-customer and available later.

With the ADD NEW BOM DATA COLUMN button you can create a new "composite" field. This will combine several fields into one.

The FIRST ROW CONTAINS FIELD NAMES box should be checked if the field names are in the proper row.

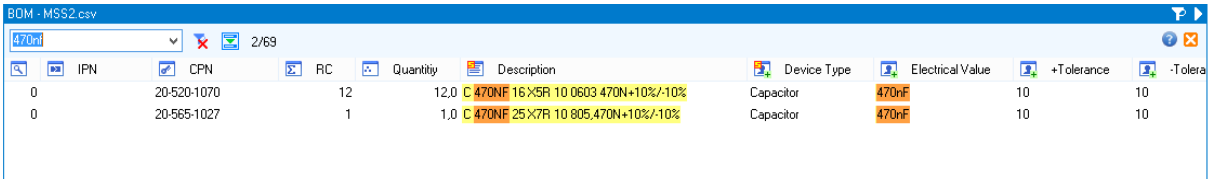
DELETE RECORDS WITHOUT CPN will eliminate "dummy" information (like text lines) so that these do not get interpreted as parts.

When completed, hit OK and the BOM will be imported.

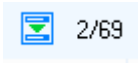


To quickly find parts, use UltraSearch, as described in Chapter 4.

For example, type in 470nf:

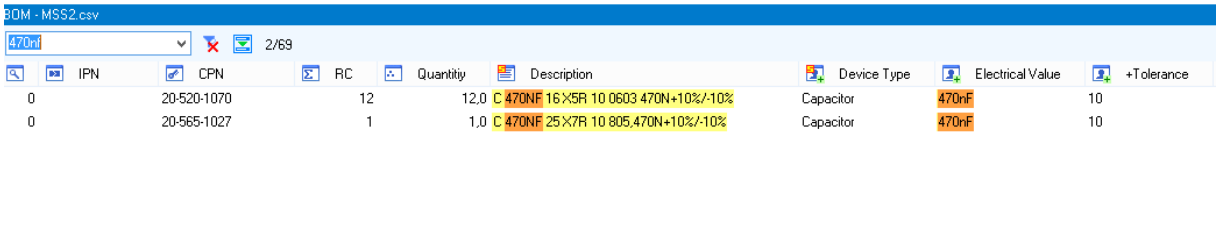

BOM - MSS2.csv
470nf
2/69
IPN CPN RC Quantity Description Device Type Electrical Value +Tolerance -Tolera
0 20-520-1070 12 12,0 C 470NF 16 X5R 10 0603 470N+10%/-10% Capacitor 470nF 10 10
0 20-565-1027 1 1,0 C 470NF 25 X7R 10 805,470N+10%/-10% Capacitor 470nF 10 10

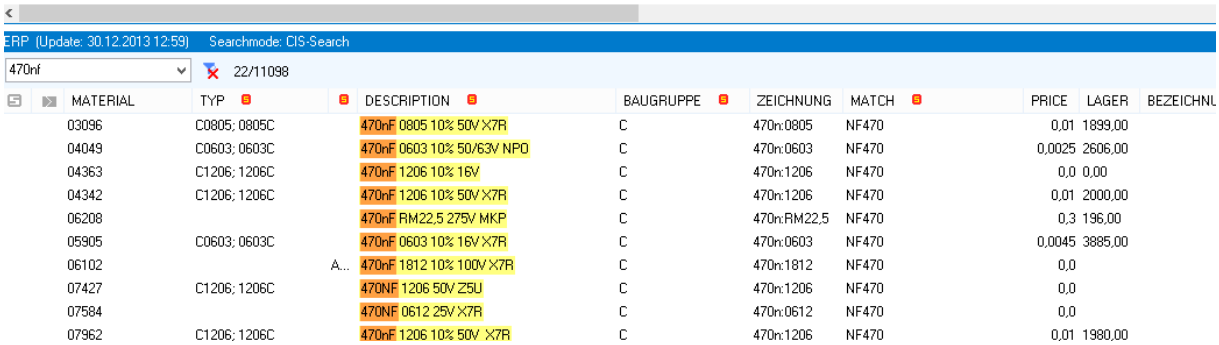
The two 470nf capacitors are displayed.

If we turn on the “Sync” button: 

then the parts that match are displayed in the ERP window as well:

(to clear the search, click on the „off filter“)


BOM - MSS2.csv
470nf
2/69
IPN CPN RC Quantity Description Device Type Electrical Value +Tolerance
0 20-520-1070 12 12,0 C 470NF 16 X5R 10 0603 470N+10%/-10% Capacitor 470nF 10
0 20-565-1027 1 1,0 C 470NF 25 X7R 10 805,470N+10%/-10% Capacitor 470nF 10



5.1 Key field

Your customer BOMs do not include the customer part number? No problem. In such cases, BOM Connector™ creates a "virtual" part number based on a CRC32 encoding of the "Key Field". This is normally the description information. This is then stored in the CIS along with the internal part number you assigned to it, and can be re-used in subsequent BOMS. This Key Field consists of Description or multiple other fields. To set the Key Field just click on the Box with the Key symbol. All fields containing the "Key" symbol will be encoded together to create a "virtual" CRC32 part number.

It is very important that this be done carefully. Misassigning the key field(s) can cause problems the next time you read in the BOM, as the encoding is done EXACTLY according to the data in the fields.

5.2 Exporting a BOM

Note: normally, you would not export a BOM until you have "prepared" it properly using the BC-PREP and, perhaps BC-CAD and BC-QUOTE modules. However, we will now proceed first directly to the export module. You can return here later once your BOM is "complete".

To export a BOM, click on BOM EXPORT.

The first thing you will see is a list of "templates". It is important to understand this concept fully.

5.2.1 What is a Template?

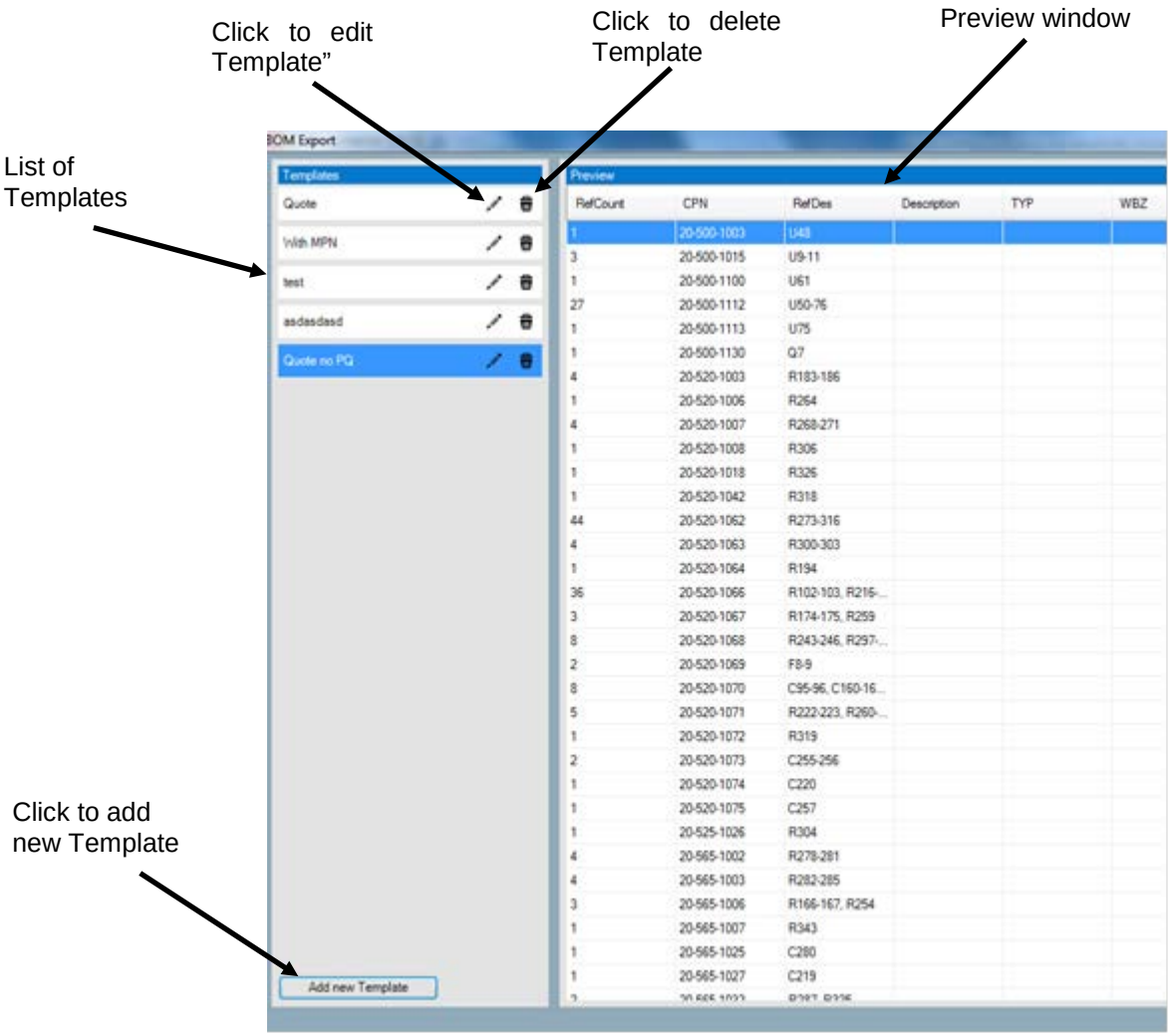
Users of BOM Connector™ normally need to create a multitude of different outputs. The output required by the Quoting Dept, for example, is very different from that required by Production. Different fields must be outputted, with different headers, different formats, etc. Outputs which are used internally do not required additional graphics such as company logos and address, while outputs designed to be viewed by others, particularly outside the company, definitely do.

For this reason, we have implemented a wide-reaching ability to create, store and administer different templates. This document is designed to show you how to do this.

5.2.2 Template Description

When you click on EXPORT in BOM Connector™ you immediately see a list of templates (or none if you have yet to create any)

5.2.3 Template Interface

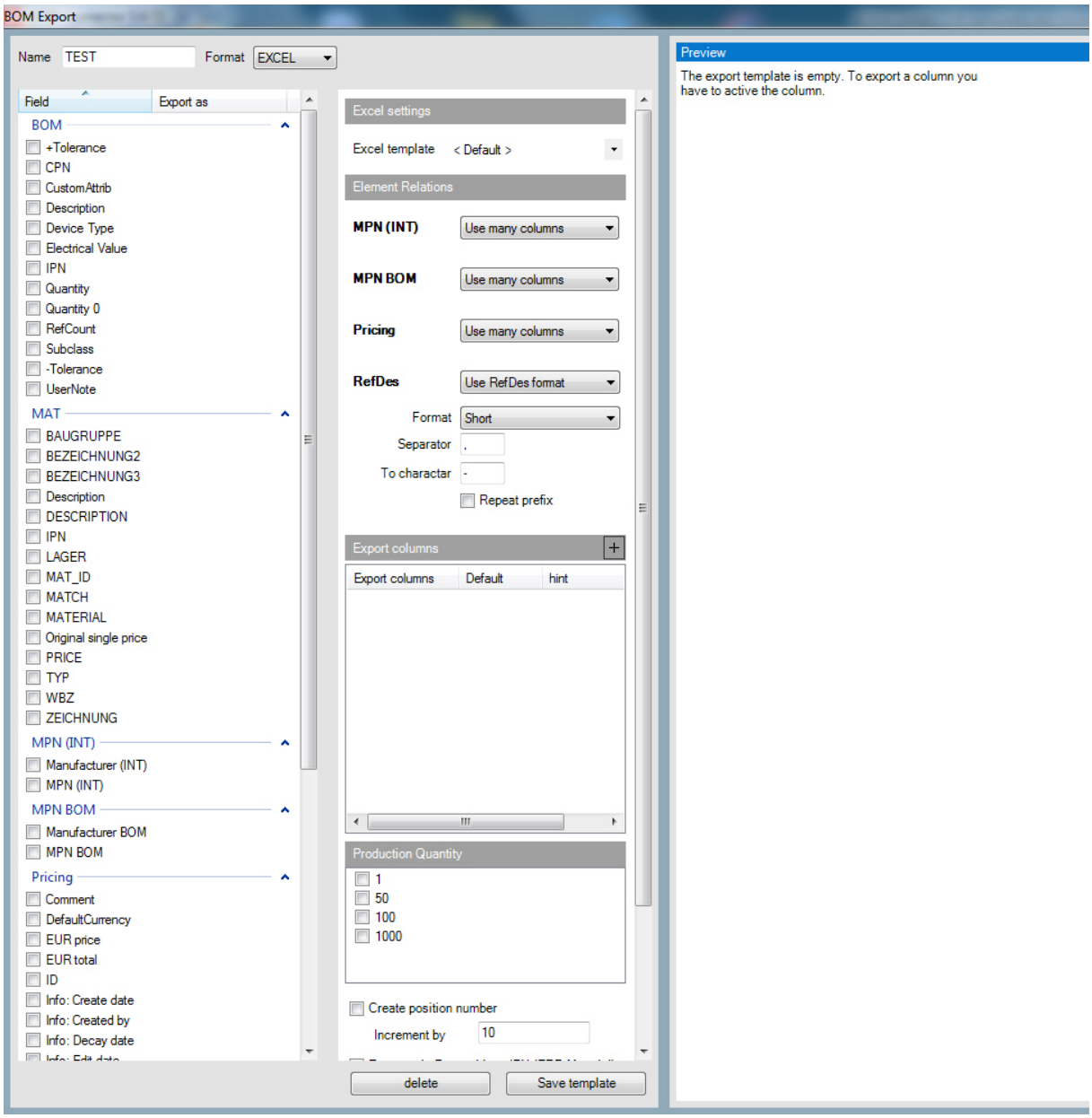


The first time you run this, your list of templates will be empty.

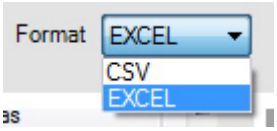
5.2.4 Creating a New Template

Let us create a new Template.

Click ADD NEW TEMPLATE.



As you can see, when you first create a template all fields are "off". First give your template a name. We will call it "TEST". There are two types of export formats, simple CSV and EXCEL. (More on CSV later.) Here we will create an Excel file. Choose EXCEL with the FORMAT drop-down:



Under Excel settings you can choose an Excel "template" to use. This may cause a bit of confusion so let's look at the difference between BOM Connector™ Export Templates and Excel Templates.

What is the difference between a "template" in BOM Connector™ and the Excel Template?

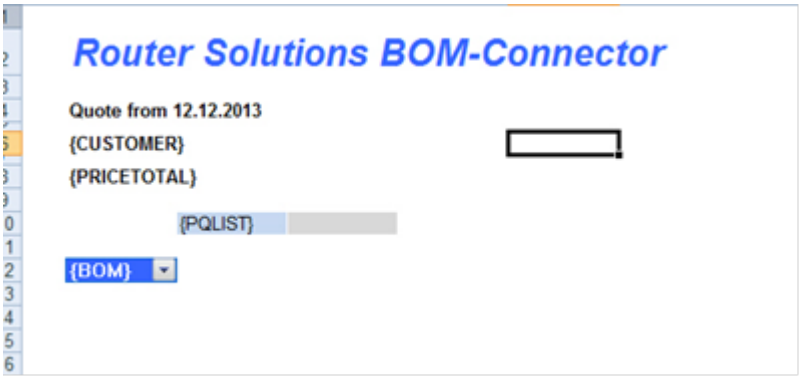
The BOM Connector™ Export template lets you specify the following:

- What type of file do I want to export? (i.e. CSV or Excel)
- What do I want in the output? (i.e. what fields)
- What should those fields be named? (i.e. same name as in the BOM/ERP or changed during the output)
- What sequence do I want the fields to be in?
- The "relations" of certain elements (i.e. do I want my MPNs in different rows or different columns, etc.) *NOTE: more on this later*

If the output is an Excel file, you probably want to pre-create an Excel worksheet with company logo and other information. This is done via the Excel Template.

There is a DEFAULT Template. It is called XTDEFAULT.XLS. It is located in your BOM Connector™ local directory (C:\Users\MYNAME\AppData\Local\Router Solutions\BOM-Connector\
where: MYNAME is your user name in Windows).

XTDEFAULT is a simple Excel file which looks like this:



Feel free to modify this, adding your company logo, etc. You can also add different "placeholder" fields. The placeholders you can add are:

1. Located at B4 is a placeholder for date. The contents are:

   ="Quote from" & " " & TEXT(TODAY();"TT.MM.JJJJ")

   You can change the text (for example, to a local language) or the date and time format.
2. {BOM} This specifies where the data should start. In the sample it is at B12. If you want your data lines to start further down and a bit more to the right, set this, for example, at C26
3. {CUSTOMER} This will insert the name of the customer here.
4. {PRICETOTAL} This will insert the “old” ERP-based pricing here. *NOTE: older versions of BOM Connector™ only*
5. {PQLIST} This will insert the current, Price Group information (see chapter 7 BC-QUOTE, page 35)

When you are finished, rename it as you wish and place it in the \XT\directory in the main BOM Connector™ directory (usually located on the server).

Once you have done this, you will see when you hit the dropdown arrow next to EXCEL TEMPLATES:

Simply choose the Excel template you want to use by clicking on it.

So, now let us choose which fields we want to export.

As you can see, the fields you can add are grouped into types.

The types are:

BOM - these are fields from your BOM

MAT - these are fields from your ERP system.

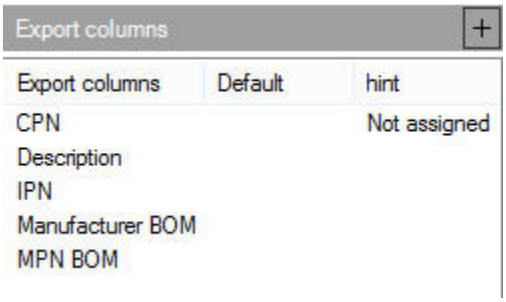
MPN (INT) - These are the Manufacturer and MPN (manufacturer part number) fields from your ERP system

MPN (BOM) - These are the Manufacturer and MPN (manufacturer part number) fields from your BOM

PRICING - These are all the different pricing-related fields from either ERP, or DCI (distributor catalog interface) or OCTOPART™, or information manually entered in the SCALE PRICES menu.

REFDES - (*Note: this must be scrolled down to see*). These are the reference designators out of the BOM (*Note: under FIELD SETTINGS you can specify in what format your reference designators should be exported*).

To add a field into your output, simply "check" the box next to the name. You will see the contents of the field appear in the preview window and the name of the field shows up in the EXPORT COLUMNS box:



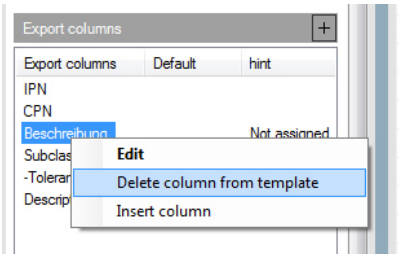
Important to note here is that if you check a field and then "uncheck" it, you will get a message whether you want to remove it from the template as well. You might, for example, want it in the template, but only want to remove it from the output for this session.

When the warning message comes:

Export
Do you want to remove the export column completly from the template? The export column is assigned for following customers: ASM, 4004

Click YES to remove it permanently from the template, NO if you just want to remove it for this session. This allows you to specify that a specific column should be in the export, but without any data. Many customers want to export empty columns to be filled in later. In such a case you will see "not assigned" displayed next to the field name, as in the example above.

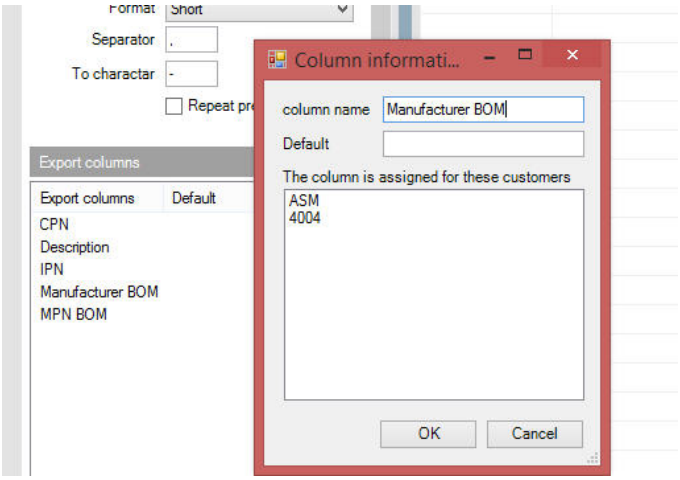
If you also wish to remove the field from the list afterwards, simply select it in the list above, right-click and choose DELETE COLUMN FROM TEMPLATE



<u>So, now let us change the output names.</u>

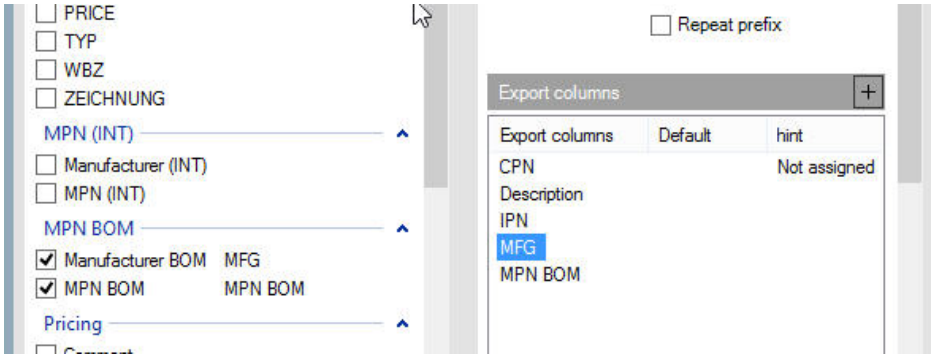
If you want a field exported to a different name, simply choose the field and right-click on it. Now choose EDIF.

You will see the following window:



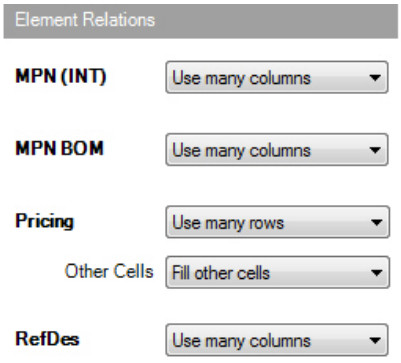
Type in the name of the field as you wish it to appear in the export (for example, above, type in MFG) and click OK:

You will now see the field name as MFG. To the left, you will see the “old name” vs “new name”



Format Options in the Template (i.e. the “relations” of elements in the output)

As mentioned earlier, there are many Element Settings that you can configure.


Element Relations
MPN (INT) Use many columns
MPN BOM Use many columns
Pricing Use many rows
Other Cells Fill other cells
RefDes Use many columns

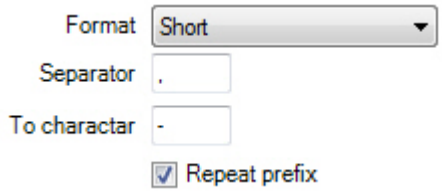
Both ERP (INT) and BOM manufacturer/MPNs can be written out in multiple rows or multiple columns.

Similarly, pricing (for example, for multiple production quantities (PQ) can be configured this way.

In the case of multiple rows (which is the normal method for Manufacturer/MPN data, you can select LEAVE OTHERS EMPTY. This will make the output easier to read.

The ideal setting for the Reference Designators is USE REFDES FORMAT.

When you select this you will have certain options:



Format: You can choose SHORT or LONG. Short will truncate them, while LONG will list all reference designators.

If you choose SHORT (which is suggested), then there are some rules for the truncation. A separator character and a from-to character must be given.

In the example above, reference designators will be expressed as:

R1,R4,R9-R12

If you do not check REPEAT PREFIX then it will be:

R1,R4,R9-12

LONG form would be:

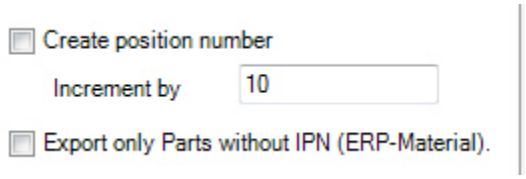
R1,R4,R9,R10,R11,R12

Production Quantity:

If you are using the Scale Pricing feature of BOM Connector™, specify here which production quantities (PQ) you want to export pricing for:

Simply select the PQ in question.

These will either be placed in columns or rows, depending on your settings on the page above.



Create position number: Many customers want a position number automatically inserted into the output. Check here and specify the increment number to do this.

The second selection allows you to export only "unmatched" items from the BOM. These are CPNs which you could not match to an IPN in your ERP. This is normally used to send information back to component engineering.

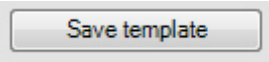
OUTPUT SORTING

Here you can specify certain columns to be sorted.

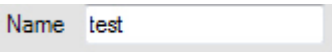
Choose the column name which you want sorted by from the drop-down list.

5.2.5 Saving and Deleting a Template

To save your template, simply click on SAVE TEMPLATE



This will save it under the name displayed in the NAME box.



If you want to change the name before you save, simply type in the name above.

To delete a template, simply click on DELETE:

Alternatively, you can simply choose a template name from the original template list, and click on the trashcan icon:

5.2.6 Editing a Template

To edit an existing template go back to the template list and click on the edit icon:

Follow the instructions above, as editing a template works the same way as creating a new template.

5.3 Using the Export Function

5.3.1 Exporting With Template

To export with a template, simply click on EXPORT BOM from the main BOM Connector™ screen:

You will now see a list of templates. Choose the template you want to use and click EXPORT at the lower-right corner.

If your export type is EXCEL this will open an instance of Excel and show your exported BOM. You will remain in the same screen in BOM Connector™

If you click on OK it will export the BOM and return to the main BOM Connector™ screen.

Click CANCEL to return to the main BOM Connector™ screen without exporting.

5.4 Viewing the Results

The results can be viewed immediately with Excel or, in the case of CSV files, with any standard text editor.

6 BC-PREP

Preparing Customer BOMs and Production Planning

This module is at the heart of BOM Connector™ from EMS companies.

After you have read in the BOM, you will note that the search icon at the top of the screen becomes active:

These search features form the basis of the BC-PREP module. They allow you to quickly find the best part in your ERP system to match the part in the BOM (i.e. the "customer" part). This section will look at the different searches in detail.

6.1 CIS Search

Re-usability is a key concept in BOM Connector™. What you do today you should not have to do tomorrow. This is the idea behind the **CIS Search.** As mentioned earlier, "CIS" is short for Customer Info Set. This is where you will store your "customer PN = internal PN" settings. Also, if you already have some of these stored in your ERP system, it will be imported into BOM Connector™ through the BC-LINK ETL (see chapter 3 BC-Link, page 9).

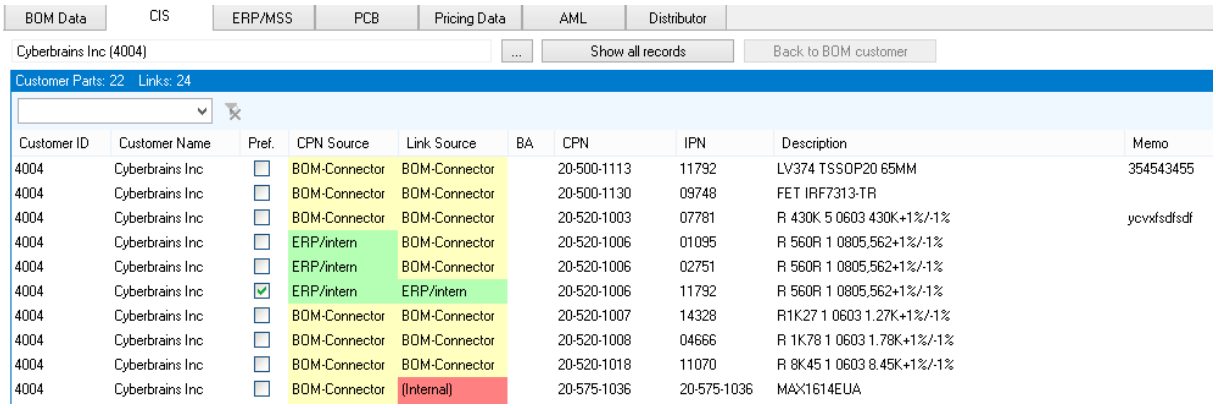
Before we run the CIS Search, let's take a closer look at the Customer Info Set (CIS).

CIS information consists of:

CustomerName	This is the name of *your* customer
CustomerNumber	This is the ID number of your customer (often used in the ERP system for billing, etc.)
CPN(s)	These are customer-specific part numbers
IPN(s)	These are the related internal part numbers (IPNs) for specific CPNs
Description	The Description field for a CPN.
CPN Memo	Information added manually in BOM Connector™ for a specific CPN

All the above data can come either directly from the ERP system as part of the BC-LINK process or as a result of working with BOM Connector™, with the exception of the last two fields (description and CPN memo). This information can *only* come from working with BOM Connector™.

You can view all CIS information via the CIS Tab:



Customer ID	Customer Name	Pref.	CPN Source	Link Source	BA	CPN	IPN	Description	Memo
4004	Cyberbrains Inc	☐	BOM-Connector	BOM-Connector		20-500-1113	11792	LV374 TSSOP20 65MM	354543455
4004	Cyberbrains Inc	☐	BOM-Connector	BOM-Connector		20-500-1130	09748	FET IRF7313-TR	
4004	Cyberbrains Inc	☐	BOM-Connector	BOM-Connector		20-520-1003	07781	R 430K 5 0603 430K+1%/-1%	ycvxfsdfsdf
4004	Cyberbrains Inc	☐	ERP/intern	BOM-Connector		20-520-1006	01095	R 560R 1 0805,562+1%/-1%	
4004	Cyberbrains Inc	☐	ERP/intern	BOM-Connector		20-520-1006	02751	R 560R 1 0805,562+1%/-1%	
4004	Cyberbrains Inc	☑	ERP/intern	ERP/intern		20-520-1006	11792	R 560R 1 0805,562+1%/-1%	
4004	Cyberbrains Inc	☐	BOM-Connector	BOM-Connector		20-520-1007	14328	R1K27 1 0603 1.27K+1%/-1%	
4004	Cyberbrains Inc	☐	BOM-Connector	BOM-Connector		20-520-1008	04666	R 1K78 1 0603 1.78K+1%/-1%	
4004	Cyberbrains Inc	☐	BOM-Connector	BOM-Connector		20-520-1018	11070	R 8K45 1 0603 8.45K+1%/-1%	
4004	Cyberbrains Inc	☐	BOM-Connector	(Internal)		20-575-1036	20-575-1036	MAX1614EUA	

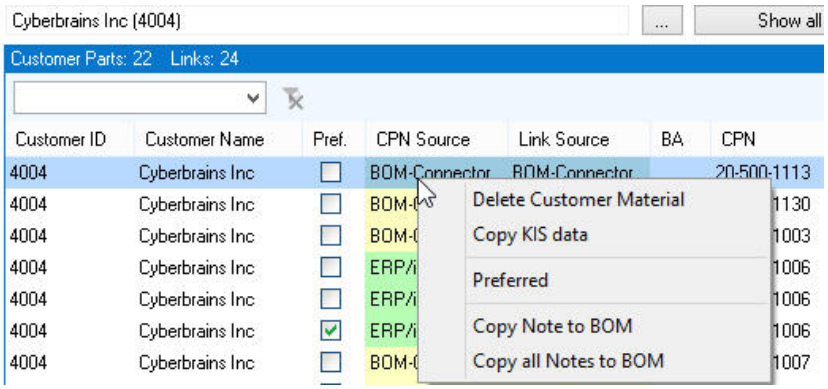
In the example above there are several entries for your customer CYBERBRAINS, which has the ID number 4004.

Here is a description of the fields:

CustomerID	This is the customer number as described above
CustomerName	This is the customer name as described above
Pref.	If there are multiple IPNs assigned to a given CPN then you can specify here which one is “preferred (for example 20-520-1006 has three IPNs assigned (01095, 02741 and 11792), but 11792 is set to preferred. So it will be automatically assigned when you use Auto-Link.
CPNSource	This specifies where the CPN came from (i.e. how did it enter the CIS). This will either be “ERP/INTERN” if it was imported via BC-LINK, or “BOM-Connector” if it was part of a BOM that was imported.
LinkSource	This specifies where the link to your IPN came from. This will either be “ERP/INTERN” if it was imported via BC-LINK, or “BOM-Connector” if it was assigned by you while working with BOM Connector™, or “INTERNAL” if it was created by you using the CREATE MATERIAL feature in BOM Connector™ (more on this later).
BA	These are User Attributes (BOM Attribute) that you assigned while working with BOM Connector™ (see below)
CPN	This is the customer part number as described above
IPN	This is your internal part number linked to the CPN, as described above
Description	This is the description field which was in the BOM you imported at the time you saved the data to the CIS
Memo	You can manually add comments (i.e. Memo) to a CPN in the BOM Window while working with BOM Connector™. These are saved to the CIS if you check the SAVE USER NOTES box when you save.

In the example above, 20-520-1006 has three IPN assignments. The first came through from the ERP system via BC-LINK. Here is, was defined that “when Cyberbrains uses CPN 20-520-1006, then IPN 11792 should be used”. Thus the source of the CPN AND the IPN are “ERP” and they are in green. The other two assignments were made while working with BOM Connector™. Thus the source of the IPN “Link” is BOM Connector™. Since the CPN originally came from the ERP system, the source CPN Source remains set to “ERP”

To Delete a CIS entry, simply select it, do a right-click and choose DELETE CUSTOMER MATERIAL:



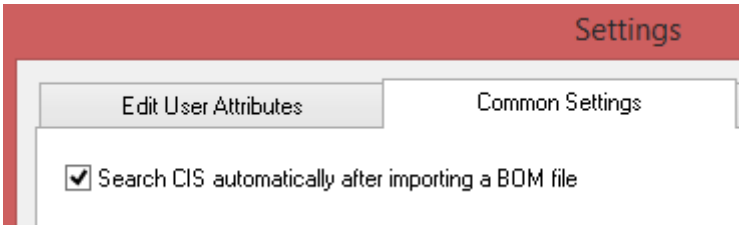
Note: you can only delete entries which have been created with BOM Connector™. ERP entries are deleted or added via the BC-LINK ETL process, depending on the information in the ERP system.

This is done to preserve the integrity or the ERP data and its status as “master”.

Now back to our exercise

6.1.1 Running the CIS Search

The CIS Search runs automatically when you load a BOM if you have the following under SETTINGS (in the Action Menu):



When you hit the CIS Search button, BOM Connector™ scans through the currently assigned parts and shows them in the lower window. This may be one, or may be many. By double-clicking on the internal part number in the lower window, you are applying it to the current BOM. The assigned part number will be displayed green in the BOM window. Price and quantity will be calculated automatically, if this information exists.

Note: If you use AUTOLINK, this will happen automatically for all parts which are in the CIS. If more than one exists, the one with the "PREFERRED" flag will be taken.

When linking, you will see different icons. Here are the mappings:

"Blue Link" means : This material has been linked and stored in the CIS.

"Green Link" means - This material has been linked, but not yet stored in the CIS.

"Red Link" means - This material has been created by the BOM Connector™ user via the "Manual Material Link" feature using the "Persistent CIS" Option and will be saved in CIS.

"Grey Link" means - This material has been created by the BOM Connector™ user via the "Manual Material Link" using the "Temporary Material ID" Option and will not be saved in CIS.

6.2 MPN Search

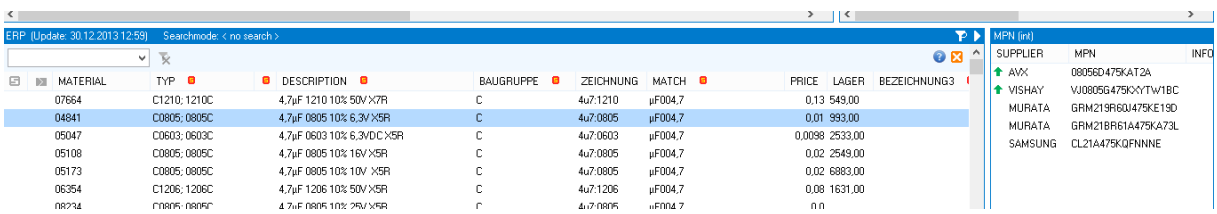
The concept of Manufacturer Part Number (which we will call “MPN” from here on in) is important to understand.

An MPN is the number which is used by the manufacturer of the part itself, for example, let us take a simple 100K resistor:

Within my company, the part number (IPN) for this part is for example “123-456”. But in my “approved manufacturer list” my company has determined that this part can be purchased from 3 sources. The name and number for each of them is the manufacturer and MPN. For example:

Manufacturer	MPN
Panasonic	ERJ3EKF5113V
Yageo	RC0603FR-071K78

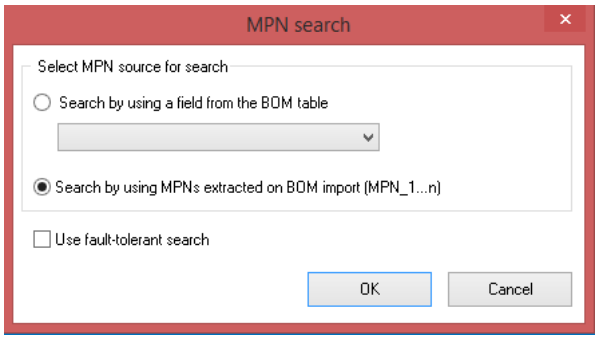
The relation between IPN and MPN is 1:n. For one IPN there can be “n” (i.e. “1” or more) MPNs associated with it. If you look at your ERP window, this is displayed as such:



The MPN (Manufacturer Part Number) search can only be used if the BOM provided by your customer contains MPN information or if the customer has provided an AML (approved manufacturer list) file and you have read this into BOM Connector™ (see Chapter 5 BC-IN/OUT, page).

Therefore, if you receive a BOM from a customer and you need to find the IPN which most closely matches a CPN, a logical place to start would be to search for which IPNs use the same MPN as the part in question. Naturally this requires the customer to provide this information. This information is either provided in the BOM itself, or through a separate “AML” List (see Chapter 5 BC-IN/OUT, page). If this information is not available, or is not reliable, or if you do not have MPNs in your ERP system, or if BC-LINK has not interpreted them properly, then you must proceed to the next search, which we call “SmartSearch”.

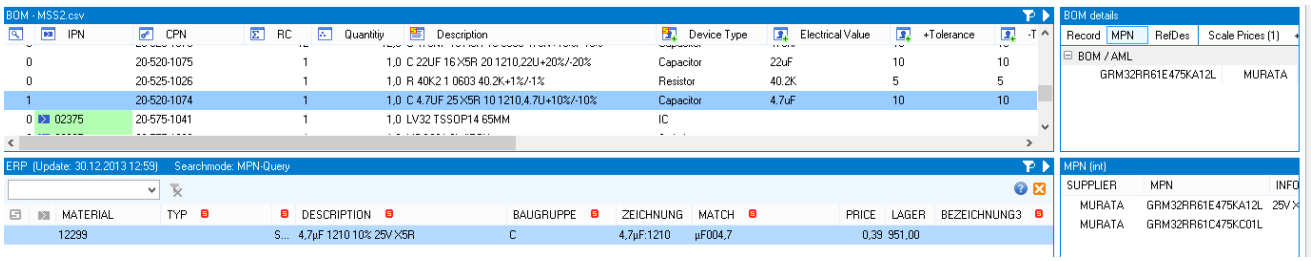
If, however, you have this information, then the MPN-Search is a great way to identify the best available part in the ERP system. To run MPN-Search, simply choose it from the search list. You will see this dialog:


MPN search
Select MPN source for search
Search by using a field from the BOM table
Search by using MPNs extracted on BOM import (MPN_1...n)
Use fault-tolerant search
OK
Cancel

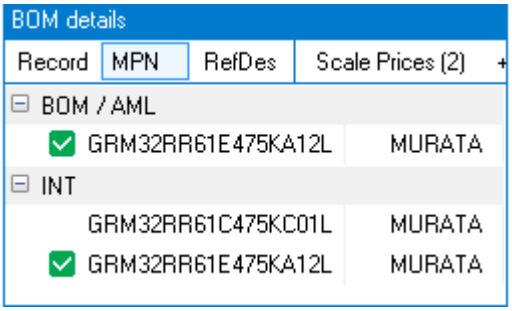
You can either choose the MPN_1 field, which is the standard MPN field, or choose a different field in the BOM.

The fault-tolerant search will give a wider search, for example, it will include MPNs that “almost” match, or ones that have additional information attached to them, such as package type.

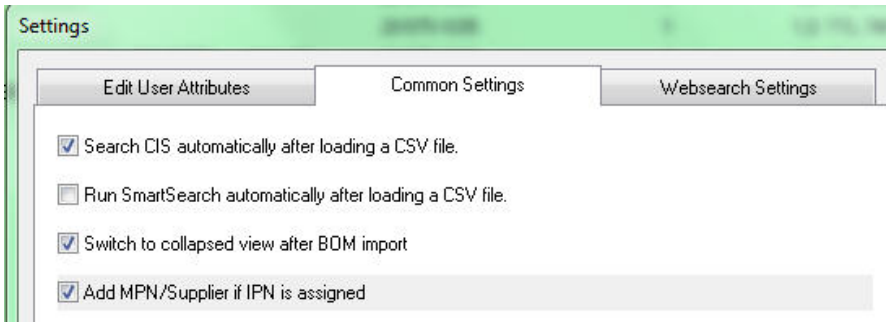
When we run the MPN Search on the sample BOM we get, for example, a match for CPN 20-520-1074 with IPN 12299. This is because both reference the same MPN from Murata:



Double-clicking on that IPN (or by using auto-assign) creates the “link” between the IPN and the CPN. When you click back on the line in the BOM, you will note that the MPN information from the ERP system has been entered in the “MPN” tab of the BOM Details window and a green check placed next to the matching part. This lets you very easily perform “AML” control.



Note: For this to happen, you must make sure the following is set under SETTINGS:


Settings
Edit User Attributes
Common Settings
Websearch Settings
Search CIS automatically after loading a CSV file.
Run SmartSearch automatically after loading a CSV file.
Switch to collapsed view after BOM import
Add MPN/Supplier if IPN is assigned

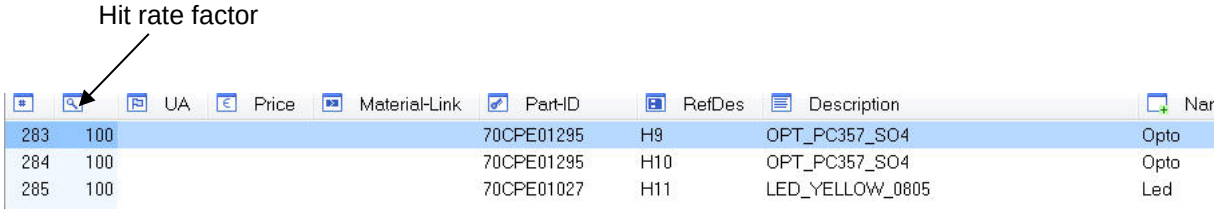
6.3 SmartSearch

The **SmartSeach** is probably the search most often used by EMS companies and is thus a key function of BOM Connector™.. With this function you can search your ERP system for the part number which best matches a given customer part. The search is based on an analysis of the part's description (which, in turn, can be a single field or multiple fields). SmartSearch is far more than a combination of SQL statements like "contains" "starts with", etc. (these are done in "Operator Search"). SmartSearch can find similarities in expressions such as "10K" and "10.000 Ohm" or language differences such as "CAP" and "KON". SmartSearch breaks down the entire description field into small parts called "tri-grams" and compares these with each other utilizing its built-in "smarts". Since the tri-gram rules are programmable and expandable, BOM Connector™ will get more intelligent with each use. Naturally, the better the data in the BOM, the better the search will go.

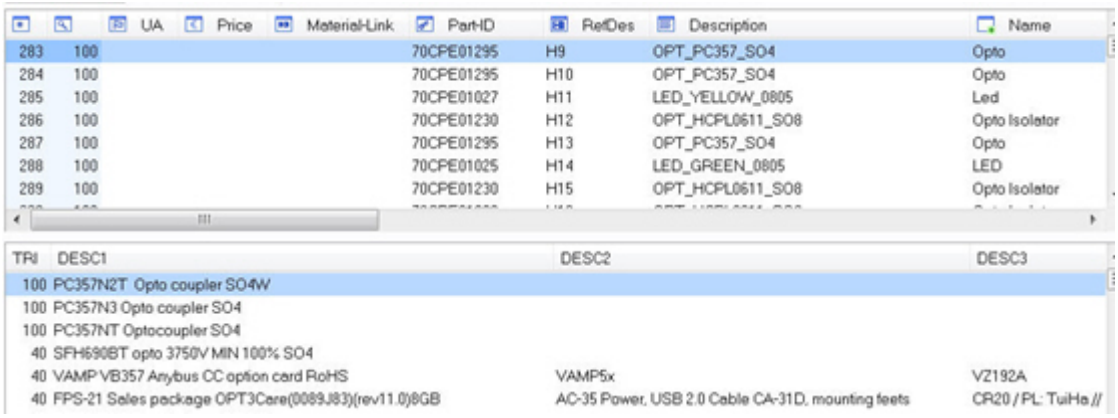
SmartSearch works based on the declared description field (or composite field) in the BOM and the description field (or fields) in ERP, which have been declared in the ETL. These are marked with a red "S" in BOM: and ERP:

By splitting into individual "tri grams" a field "100k 0603 1,0%" will receive a high match to an ERP part with "R0603 1.0v.H. 100kO" description.

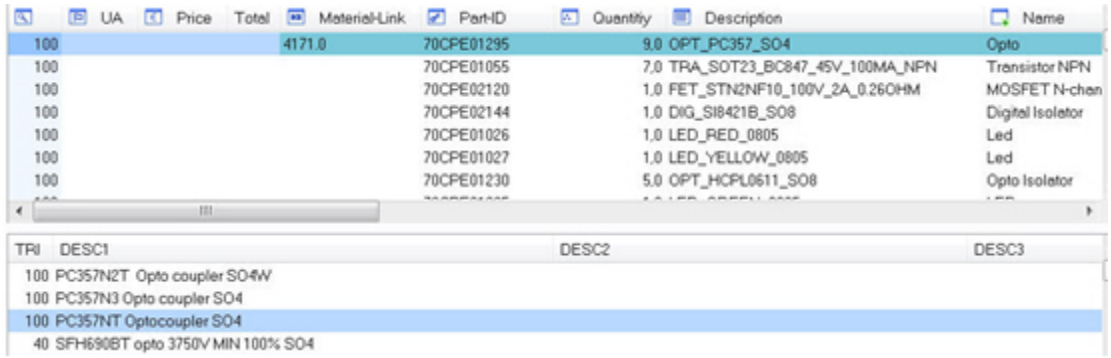
The parts with the highest "hit rate" are displayed first, with a "hit rate factor". You can sort your BOM based on the hit rate factor to see which parts matched up best.



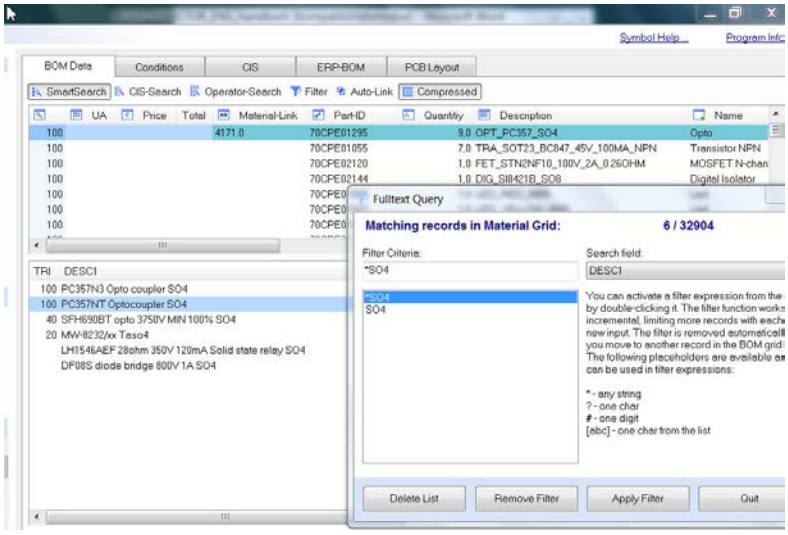
Click on the part in the BOM Window, the ERP window below will show all parts from "best" to "worst". Your best match should be found in the first 10 entries.


UA Price Material-Link Part-ID RefDes Description Name
283 100 70CPE01295 H9 OPT_PC357_SO4 Opto
284 100 70CPE01295 H10 OPT_PC357_SO4 Opto
285 100 70CPE01027 H11 LED_YELLOW_0805 Led
286 100 70CPE01230 H12 OPT_HCPL0611_SO8 Opto Isolator
287 100 70CPE01295 H13 OPT_PC357_SO4 Opto
288 100 70CPE01025 H14 LED_GREEN_0805 LED
289 100 70CPE01230 H15 OPT_HCPL0611_SO8 Opto Isolator
TRI DESC1 DESC2 DESC3
100 PC357N2T Opto coupler SO4W
100 PC357N3 Opto coupler SO4
100 PC357NT Optocoupler SO4
40 SFH690BT opto 3750V MIN 100% SO4
40 VAMP VB357 Anybus CC option card RoHS VAMP5x VZ192A
40 FPS-21 Sales package OPT3Care(0089J83)(rev11.0)8GB AC-35 Power, USB 2.0 Cable CA-31D, mounting feets CR20 / PL: TuiHa //

In this example, you may want to best use the third entry - the Optocoupler "NT". Simply double-click and the ERP part number for this selection will be added to the BOM.

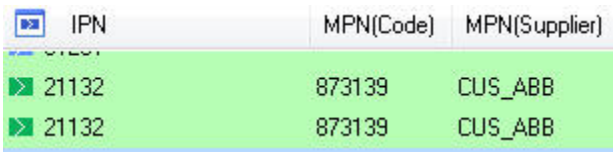

UA Price Total Material-Link Part-ID Quantity Description Name
100 4171.0 70CPE01295 9,0 OPT_PC357_SO4 Opto
100 70CPE01055 7,0 TRA_SOT23_BC847_45V_100MA_NPN Transistor NPN
100 70CPE02120 1,0 FET_STN2NF10_100V_2A_0.26OHM MOSFET N-chan
100 70CPE02144 1,0 DIG_SI8421B_SO8 Digital Isolator
100 70CPE01026 1,0 LED_RED_0805 Led
100 70CPE01027 1,0 LED_YELLOW_0805 Led
100 70CPE01230 5,0 OPT_HCPL0611_SO8 Opto Isolator
TRI DESC1 DESC2 DESC3
100 PC357N2T Opto coupler SO4W
100 PC357N3 Opto coupler SO4
100 PC357NT Optocoupler SO4
40 SFH690BT opto 3750V MIN 100% SO4

In some cases you may get so many suggestions that it is hard to sort through them all. In this case, simply use the "Filter".



Here we have added the filter "*SO4" in order to shorten our list to only show parts from the ERP system which contain the "SO4". As you can see, you list has been considerably shortened.

Choosing an IPN Automatically Adds all Associated MPNs into the BOM



Note: for this to work, your ERP link ("ETL") needs to have been written to properly handle MPNs. If this is not the case, contact Router Solutions.

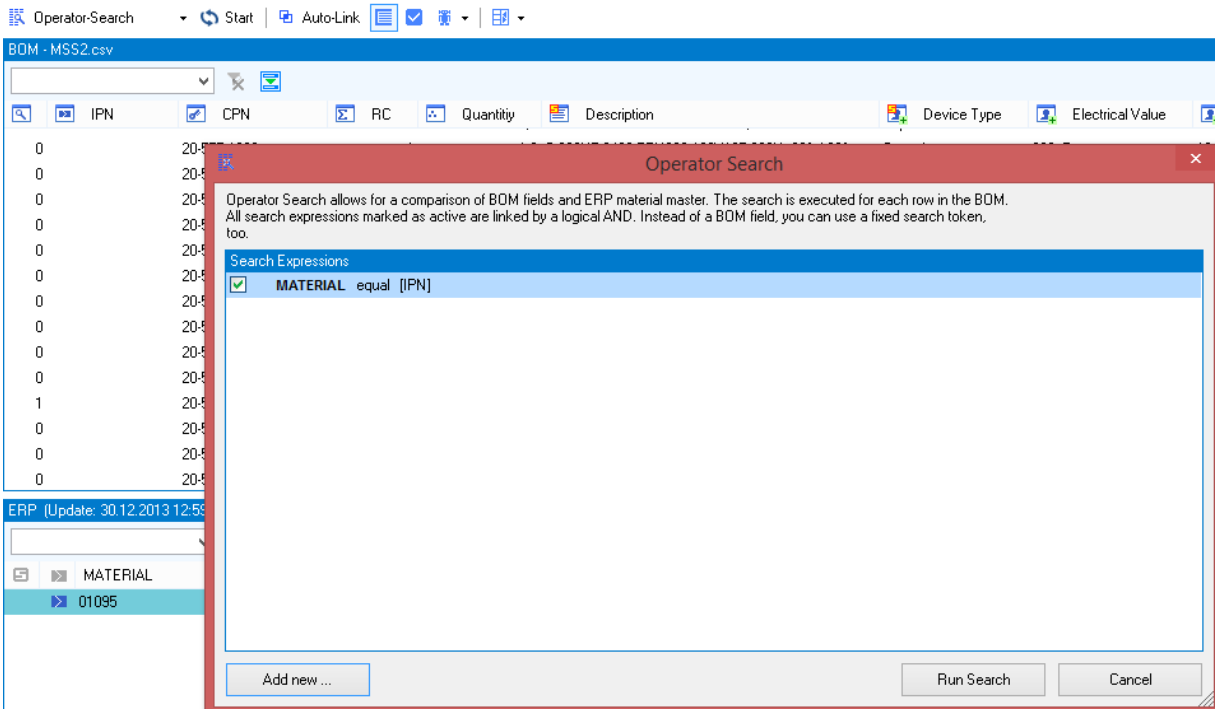
6.4 Operator Search

Even the smartest of searches will not cover all the myriad parts on the market. . This is why we have built a very powerful "Operator search" into BOM Connector™. . We call it Operator search" because statements like "equal" "not equal" "contains" etc.. are known as "operators" in database language.

There are several instances where the operator search will produce the best results.

A good example is when the customer has put manufacturer info (like MPN) into the BOM data and this data is embedded into fields in the ERP which are not specifically MPN fields.

Run OPERATOR SEARCH. The Conditions Window will appear:



For example, in our case we have an ERP field called DESC2, which contains vendor information. In the BOM there is a PREF MAN field. So we will create a condition which says "show all parts where DESC2 in ERP is equal to PREF MAN in the BOM".

In the drop down "material field" choose DESC2 from the list. The operator is "equal". Now hit the FIELD button and choose the "Preferred Manuf" from the list of BOM fields. You can test the expression with the "test expression" button. When finished click OK.

Once created, you can run this and any other "checked" condition by clicking on the OPERATOR SEARCH button in the BOM tab.

Filter lets you easily narrow the resulting list, which depending on your criteria can be very long (think of "contains 10uF". This can result in hundreds of parts listed. Using the filter and reduce this substantially.

With the **Compact** button you can switch the displayed BOM into "non-flattened" mode, which means that each part number will be listed individually, followed by a single line containing all the reference designators.

Note: the automatic price and quantity calculation only works in compact mode.

6.5 Recap the Search Methods

To recap, in order to most efficiently search for matches, you should use the following sequence:

1. **CIS Search** If you already matched customer part numbers, and want to use these, hit the CIS search button (or Autolink). This is the "re-usability" feature described earlier.
2. **MPN Search** Normally, the safest way to match is when a customer has given MPNs in the BOM, or provided you with an AML list (approved manufacturer list- often known as AVL).
3. **SmartSearch** If nothing has been stored in the CIS for a given customer part number, the interesting work begins. Use the SmartSearch to find which ERP part best matches the customer part.
4. **Operator Search** Here you can use other fields in the BOM and ERP system to interactively perform standard SQL-type queries.

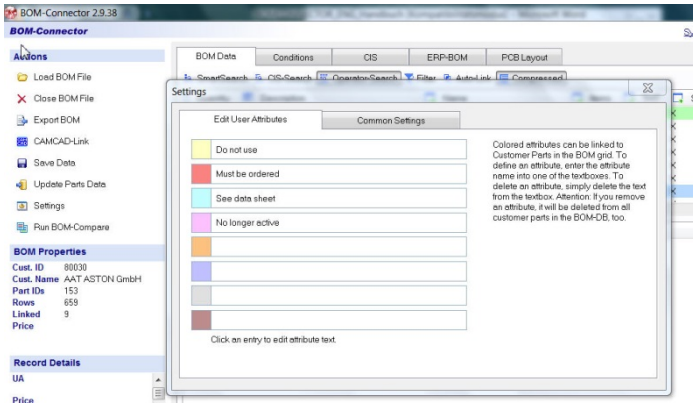
6.6 User Attributes

User Attributes let you add information to a given customer part number. The idea behind this is that you can use your experience to tell BOM Connector™ for the future that, for example, certain parts are problematic and should not be used.

The user attributes and their colors are defined by you under SETTINGS. They are then stored in the CIS.

6.6.1 Creating User Attributes

Hit SETTINGS in the action menu.

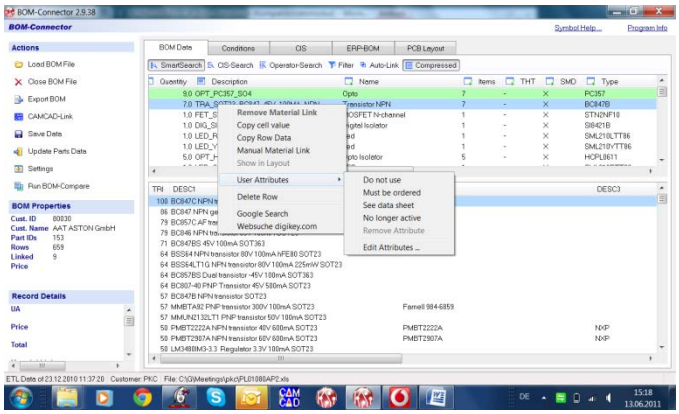


The settings you make will be stored in the CIS and will be available in future whenever you do a CIS Search of use Autolink.

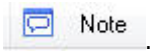
The colors also appear in the Excel file when exported.

6.6.2 Assigning User Attributes

Click on a part number in the BOM window. Right-click and choose User Attributes, then select the one you wish to assign.



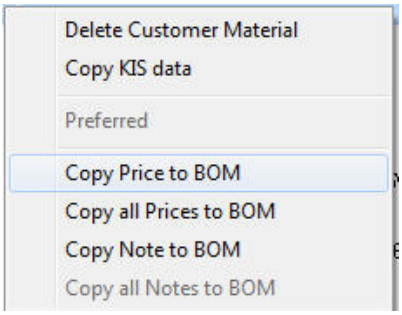
Adding **User-Savable Notes Entries**

How to Use?
This works just like the price information. When you read a BOM into BOM Connector™, you will see a new field automatically added 

. This can either be entered in by hand, or you can choose a field to be the NOTE field when you read in a BOM. When you do a CIS save, simply check the box "Save User Notes" and this information will be added to the CIS.

To use these later, simply load a new BOM, perform the CIS Search as you normally do, and go to the CIS tab. From here, you can either load a price for a single CPN into the BOM, or load all.

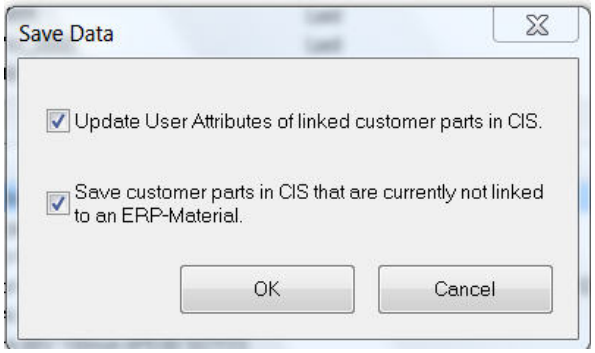
To load the note for a single CPN, choose it in the list, then right-click and select "Copy Note to BOM":



To copy all notes to the BOM, simply select "Copy all Notes to BOM".

6.6.3 Saving Assignments and User Attributes

In order to save when you have assigned - internal part numbers = customer part numbers, as well as any user attributes, hit SAVE from the actions menu.


Save Data
Update User Attributes of linked customer parts in CIS.
Save customer parts in CIS that are currently not linked to an ERP-Material.
OK
Cancel

You can now choose whether you want to save only the part number correlations you have made, or additionally, wish to save all user attributes, with or without part number correlation.

7 BC-QUOTE

The BC Quote is a great tool for making quotes.

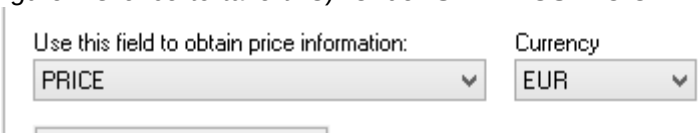
To understand the BC-QUOTE module it is important to understand the BC concept of pricing. The first and most basic source of pricing is your ERP system. If that price is accurate enough for quoting, then the BC-LINK module will import these prices as part of the ETL process and all is fine. You can use them without further effort. However, finding the right price for quotation and part sourcing is normally far more complicated. The ERP price is usually just a guideline price. Proper pricing is based on many different factors, such as

1. Quantity which will be ordered. Here the rule, as always, the more you buy the better the price
2. Distributor stock
3. Currency exchange rate
4. Delivery times
5. Ability to pre-arrange better pricing
6. Etc.

In short, getting the best price normally means “tapping in” to several sources. This blends in perfectly with BOM Connector™’s overall philosophy of taking information from diverse sources and presenting it in a clear, easy-to-use way, saving you the time consuming search efforts.

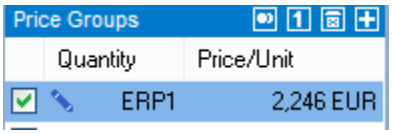
7.1 Taking from ERP System

As part of the ETL configuration process, it was determined where pricing is to be found in your ERP system. You can easily see if this worked by looking in to the ERP window for a PRICE field (*Note: You might have to configure BC once to take this*). Under SETTINGS – CIOMMON SETTINGS you should see this setting:



Normally, pricing is a straight 1:1 from ERP. Sometimes, ERP pricing is very detailed and includes “scale prices”. For this see the section 7.3 What are Scale Prices?.

To use the ERP price in your quotes, simply “activate” the ERP1 Price Group (more on Price Groups in a moment). To do this, click the box next to ERP1 at the lower-left of the screen:



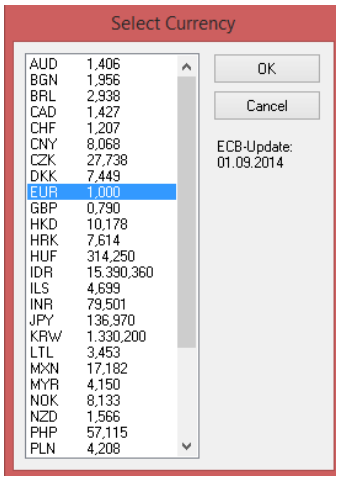
7.2 What are Price Groups?

Simply put, Price Groups are the prices calculated from various sources for a given Production Quantity.

The Price Group ERP1 is the only one visible the first time you install BOM Connector™. This is Source= ERP and Quantity=1 and thus, the most basic type of pricing available.

You can add, delete and change the display of price groups via these icons:

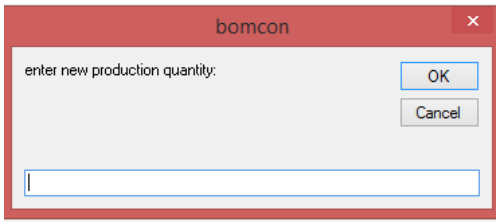
Select Currency: This lets you select the currency you want your Price Group to be displayed in. BOM Connector™ already downloaded the currency cross-rates from the European Central bank, so all you need to do is click here and choose the currency:



Change sum/total: Click here to change between displaying only the “per board” price and the total price, which is calculated by multiplying the per-board price by the Production Quantity (PQ)

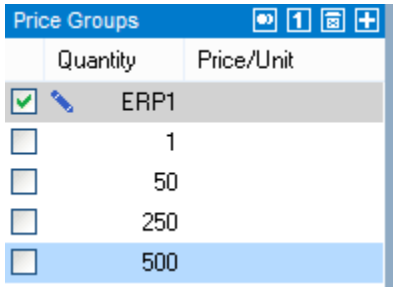
Delete a quantity: Once you have added Production Quantities, you can delete them here

Add a quantity: This is where you add your Production Quantities. These are used to calculate the Scale Prices from the various sources. Simply click here and you will see this dialog:



Enter the amount of boards you will produce and click OK.

Once you have entered a few Production Quantities (i.e. 1, 50, 250,500) your screen should look as follows:



We added a Price Group of “1” because it allows us to make inquiries of pricing from sources in addition to the ERP system for a minimum order of “1”. Remember, ERP1 is ONLY from the ERP system as source.

Let's start with the simple example of using prices from ERP 1:1. In the exercises during the BC-PREP section we used the various search routines to find and assign parts from the ERP systems (IPNs) to the customer parts in the BOM (CPNs). Some of these parts had prices in the ERP system. When you turn "one" ERP1, as above, you will notice that two new columns have appeared and some prices:

MSS2.csv

E=1 (EUR)	S=1 (EUR)	IPN	CPN
		08624	20-500-1003
		04970	20-500-1015
0,09	0,09	08437	20-500-1100
			20-500-1112
		11792	20-500-1113
		09748	20-500-1130
0,0014	0,0056	07781	20-520-1003
			20-520-1006
0,0009	0,0027	14328	20-520-1007
0,0008	0,0008	04666	20-520-1008
0,01	0,01	11070	20-520-1018

E=1 refers to the Price Group of ERP1. S=1 is the Sum, which for this particular Price Group is equal to the REFCOUNT. The Price Group itself now displays the total:

Price Groups

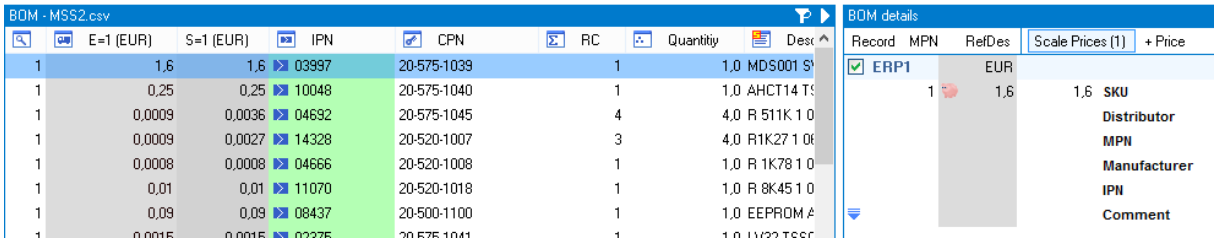
Quantity	Price/Unit
ERP1	2,246 EUR

Now lets move on to the "Scale Prices".

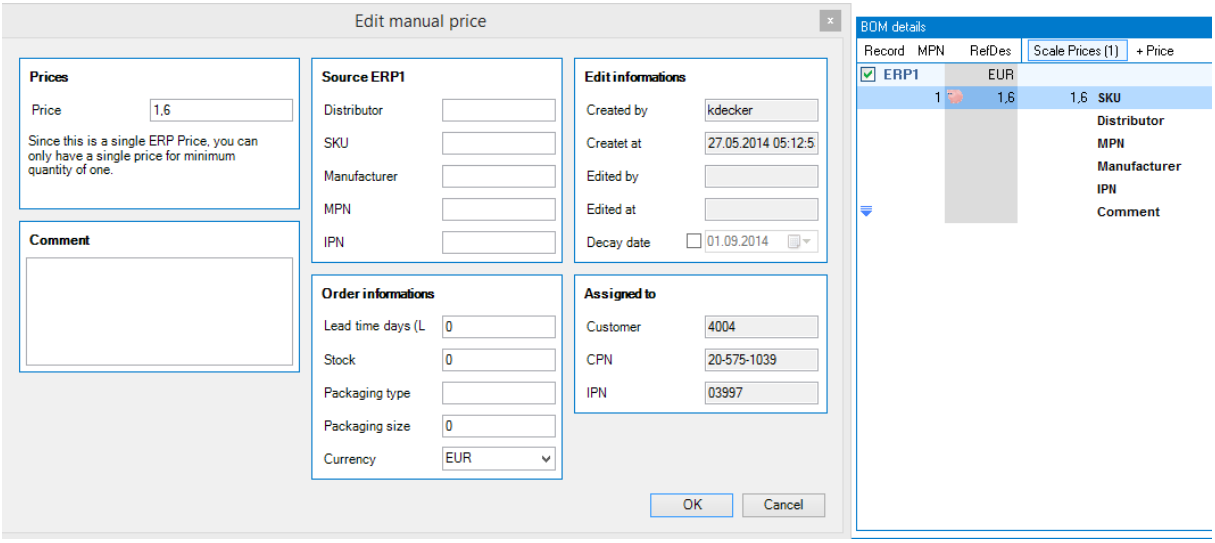
7.3 What are Scale Prices?

Scale prices are simply pricing based on quantities. When you select a Price Group, for example "50", BOM Connector™ will multiply the REFCOUNT by the Production Quantity (in this case "50") to achieve the total number of components which need to be purchased. In the sample BOM, for example, the part 20-520-1066 has a REFCOUNT of 44, which means the system will look for a Scale Price for 2200 pieces. So, for example, if a distributor is offering three prices for a) QTY 1-1000 b) QTY 1001-2000 and c) QTY 2001 and over, then BOM Connector™ will take price c) for this particular part.

The Scale Prices for each part are visible in the BOM window under the BOM Details slider. If you click on one of the parts with an ERP price visible, you will see that one Scale Price has been added. If you click on "Scale Prices" in the right-hand window, you will see:



You can even edit this information right here by choosing the Scale Price in the right hand window, right-clicking on it and choosing EDIT:



This brings up the Manual Price Edit Dialog, where you can change, edit, delete or add information.

This information is then saved into the BOM Connector™ Pricing Database.

7.4 Searching for Pricing for Various Sources

There are three main “external” sources (i.e. outside the ERP system) for obtaining price information:

a) Distributor Catalog

b) Octopart™

c) Distributor Request

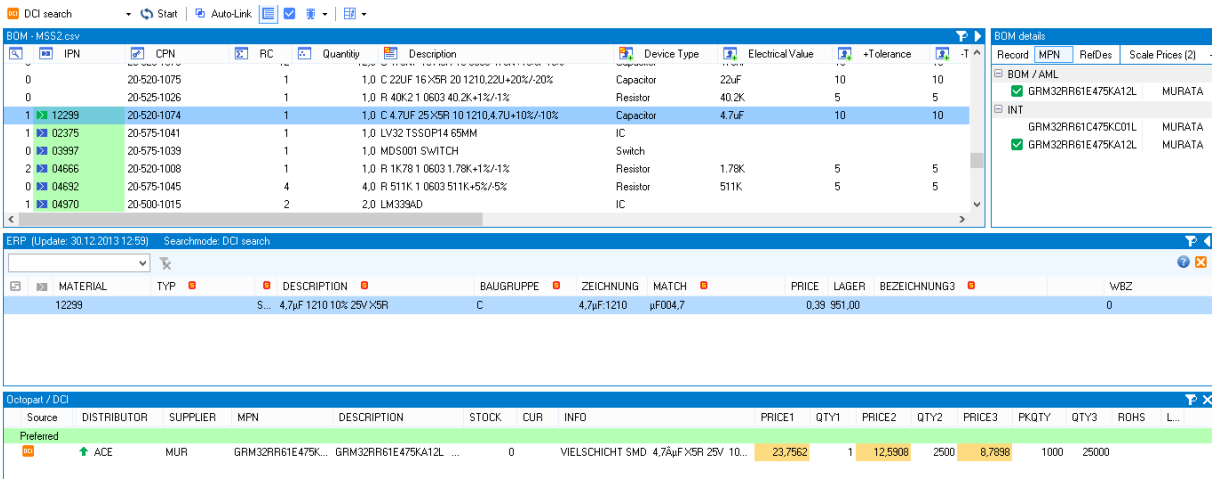
Let’s go through each of these:

7.4.1 Distributor Catalog

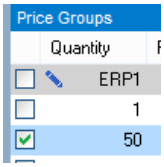
BC-Quote has something called a “Distributor Catalog Interface” (DCI). This is a configurable reader for distributor-supplied price lists (in Excel format). The DCI automatically checks a user-defined directory for the latest price lists and, if the date is newer than the last time it checked, it imports all pricing and scale information into the BOM Connector™ Pricing Database.

Once this information is available, it can be checked via the DCI-Search.

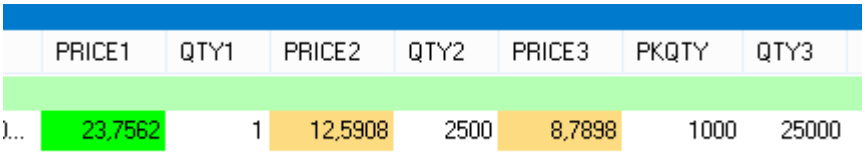
Taking the example we used in the MPN search in the BC-PREP section, we see:



Here a price list provided by ACE has been imported via the DCI and the DCI-Search found a match for the Murata part. The price information is displayed. However, no Scale Price has been highlighted because no Price Group has been selected. Now, if we select, for example, Price Group “50”:

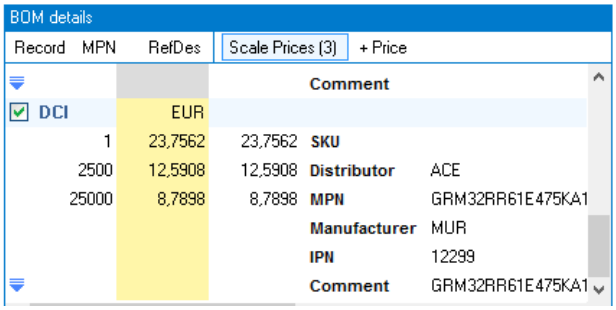


Then suddenly we see QTY 1 highlighted:



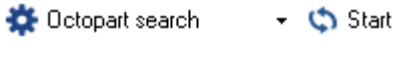
This tells us that the PRICE1 is the Scale Price that matches for this Production Quantity.

To select the price, simply right-click and choose ADD SCALE PRICE. The price is added to the SCALE PRICE tab in the BOM Details Window

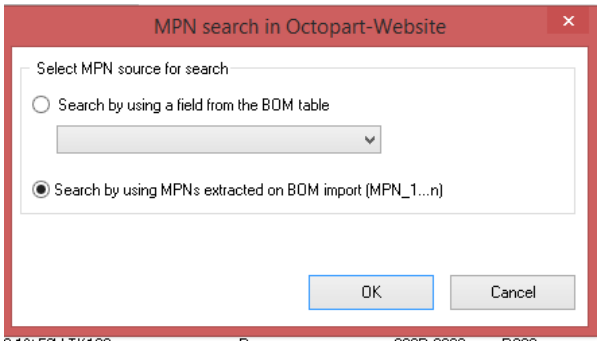


If the price doesn’t appear in the BOM, it is because there is a better price and BC-QUOTE’s “best price” function has taken it. To de-activate the other prices, simply uncheck them

7.4.2 Octopart™

Octopart™ is a web-based portal where many distributors post up-to-the-minute pricing. The Octopart™ interface is developed using the Octopart™ API toolkit. To search for prices on Octopart™, you can choose: 

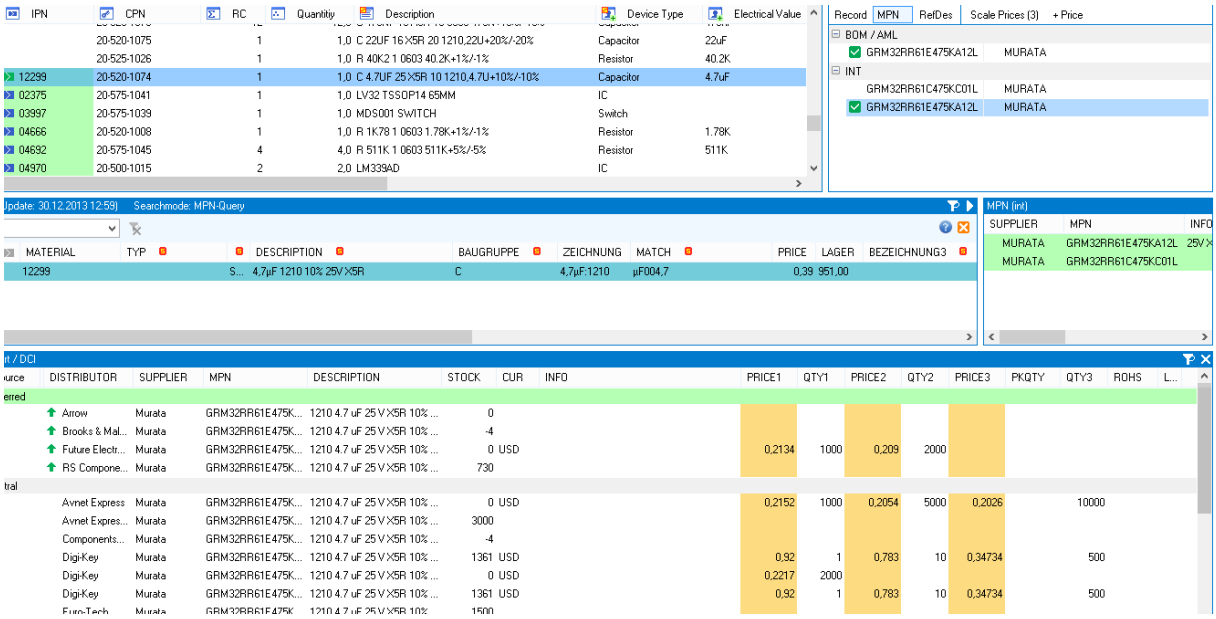
This brings up the following dialog:


MPN search in Octopart-Website
Select MPN source for search
Search by using a field from the BOM table
Search by using MPNs extracted on BOM import (MPN_1...n)
OK
Cancel

This is almost identical to the dialog in the MPN search described in the BC-PREP section, except that there is no “fault-tolerant” search. MPN information must match exactly.

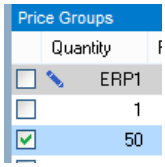
The Octopart™ Search searches through all MPNs in the BOM, including those which belong to the linked IPNs.

Taking the example we used in the MPN search in the BC-PREP section, we see:

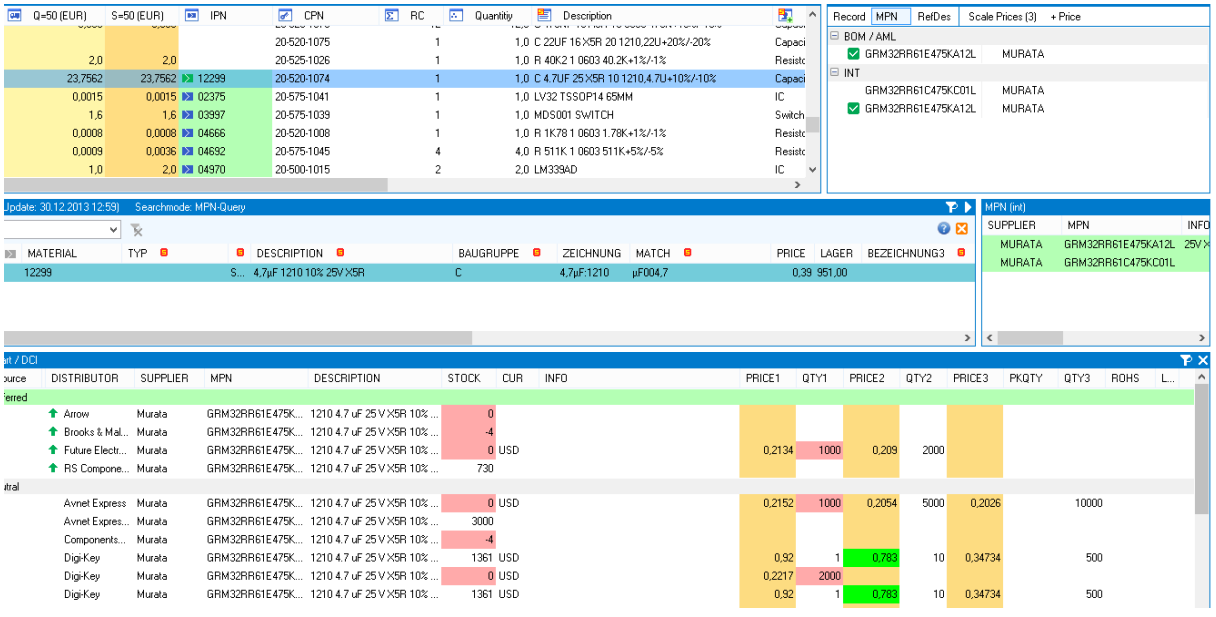


First off, note that the distributors have been grouped into PREFERRED, NORMAL and UNDESIRED. For more information on this, see the next section “Distributor Handling”.

Here the Octopart™-Search found a match for the Murata parts. The price information is displayed. However, no Scale Price has been highlighted because no Price Group has been selected. Now, if we select, for example, Price Group “50”:



Then suddenly we see QTY 2 highlighted:



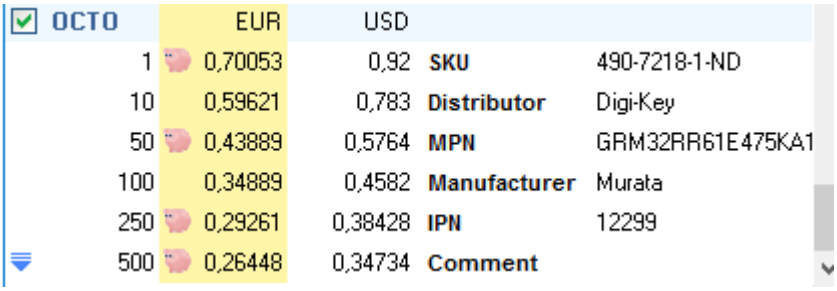
This tells us that the PRICE2 is the Scale Price that matches for this Production Quantity.

You will also notice that several entries are displayed in red. This indicates that either:

- There is insufficient stock
- The distributor in question requires a minimum order in excess of the Production Quantity.

The best price is displayed in dark green, with next-best prices in a scale of green-to-yellow.

To select a price, for example, the price from Digi-Key, simply right-click and choose ADD SCALE PRICE. The price is added to the SCALE PRICE tab in the BOM Details Window



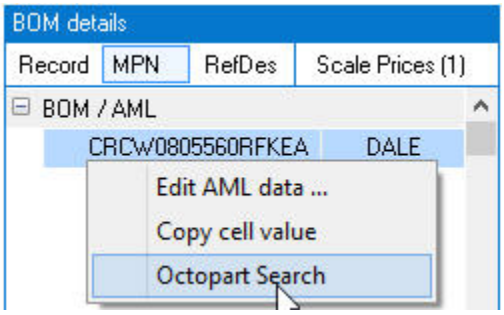
If the price doesn't appear in the BOM, it is because there is a better price and BC-QUOTE's "best price" function has taken it. To de-activate the other prices, simply uncheck them

In this case, the Octopart™ price is the best one for 1 – 50 – 250 and 500. So you shouldn't have to uncheck anything. Notice that BC-QUOTE's currency calculator has automatically calculated the Euro price for all US Dollar prices.

Using the Octopart™ Interface for Individual MPNs

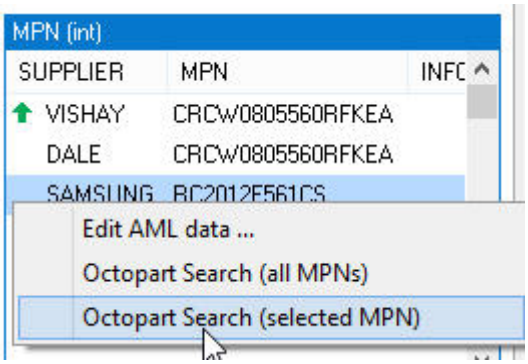
It is often easier to search for prices using the Octopart™ interface for specific MPNs.

To do this, right-click on the MPN in the BOM-Details Window:



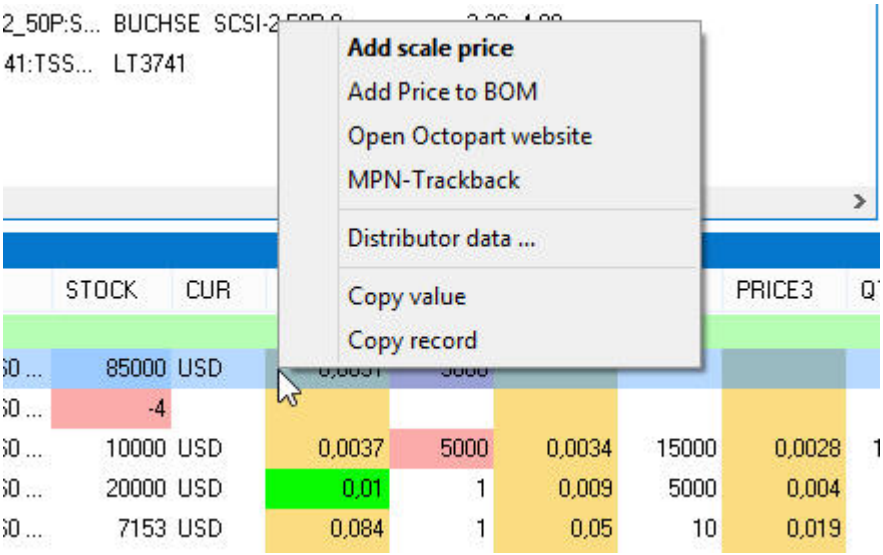
This will run the Octopart™ search for that specific MPN.

You can also run the Octopart™ search for specific MPNs in your ERP system. To do so, right-click on the MPN in the ERP MPN (INT) Window.



As you can see, you can either run the search for the chosen MPN or for all the MPNs which *are linked to the IPN*, by choosing the middle option (Octopart™ Search (all MPNs).

If you click into the Octopart™ Window area and right-click you can **Open the Octopart™ Website** and access information available there, such as the data sheet for that part.



7.4.3 Distributor Request

For parts that you can't get a price for using the ERP price, the DCI search or Octopart™, BC-QUOTE has a "Distributor Request" feature. This lets you send out an RFQ (request-for-quotation) to a list of distributors.

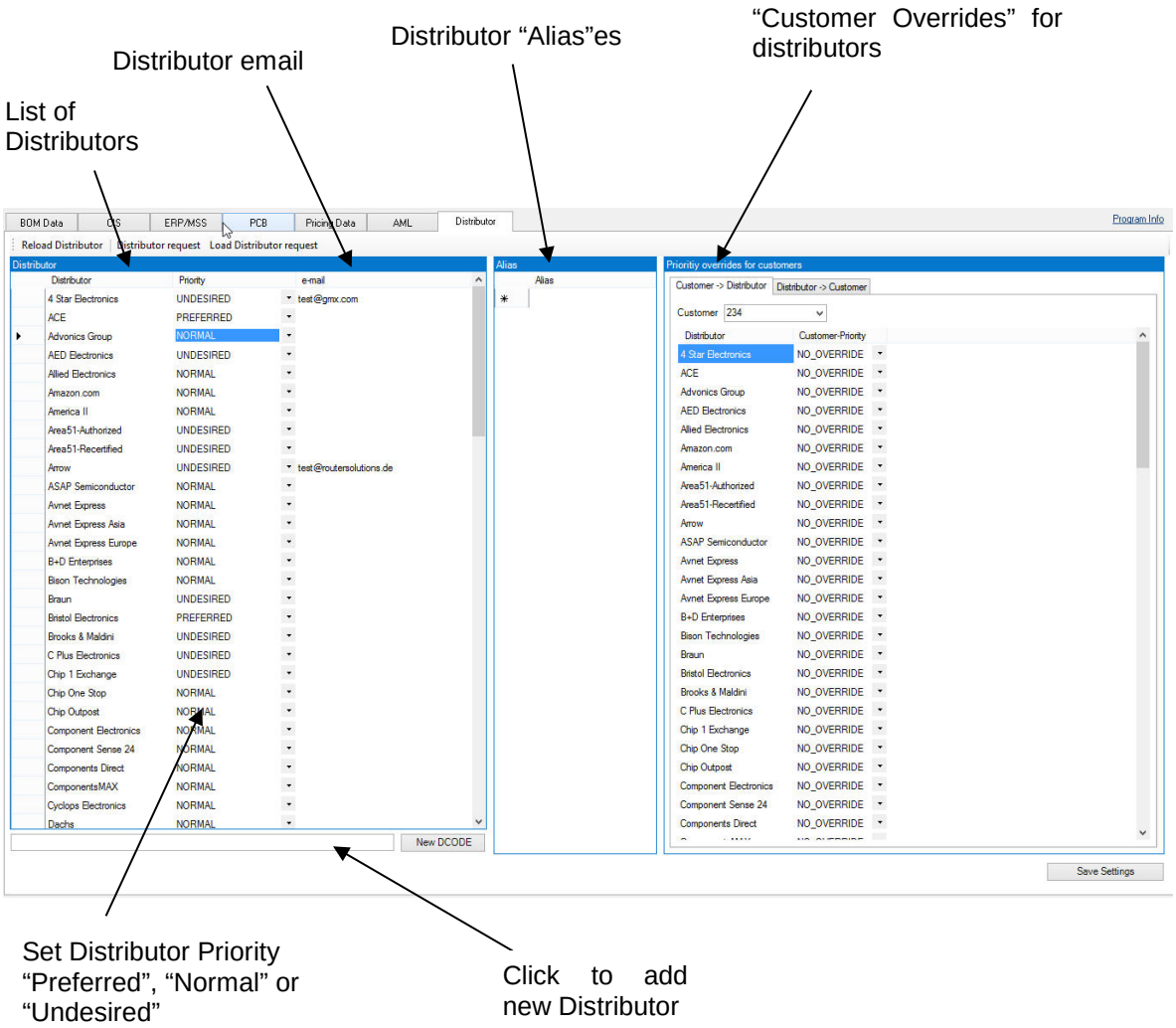
This is a very useful feature in the BC-QUOTE module, as it simplifies the part sourcing process.

To better understand this feature, let's do a brief introduction to BOM Connector™'s distributor management.

7.4.3.1 Distributor Handling

The BOM Connector™ database includes a list of distributors, which you build up. The Distributor List is available when you click on the tab called

7.4.3.2 The Distributor Tab



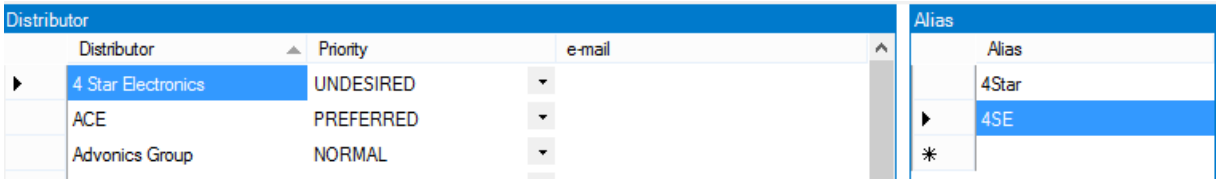
The first time you run this, your list of distributors will, of course, be empty. When you run the Octopart™ Search once, this list will be filled.

You can add distributors using the “ADD DCODE” button.

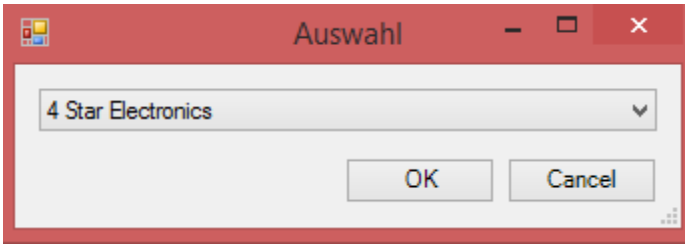
In order to maintain database integrity with past price quotations, it is currently not possible to delete Distributors, so take caution when adding them.

Once it is filled, you can start “classifying” your distributors into three categories: PREFERRED for distributors you wish you handle first, NORMAL for those with no preference, and UNDESIRED, for the ones you want to keep our of any best-price calculations. (*Note: to “delete” a distributor simply set it to “UNDESIRED”.*)

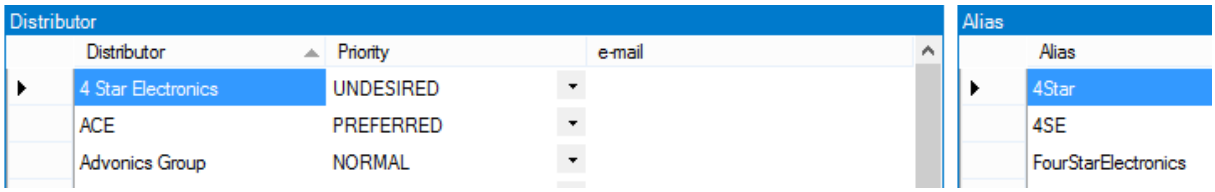
The ALIAS function is designed used to handle different ways of writing a distributor name. For example, 4Star Electronics could be written as “4Star” or “4SE”, etc. Adding each of these would needlessly fill the list and run the risk that quotes written in the different formats won’t all be considered as coming from the same company. To enter an alias, simply click on the distributor name and enter the various alias forms:



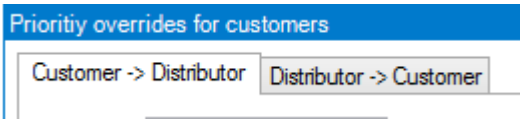
If for example, “FourStarElectronics” was already in the list as a distributor, though it is only an alias, you can select it, then right-click and select “IS AN ALIAS FROM ANOTHER DCODE”, then choose 4Star and hit OK:



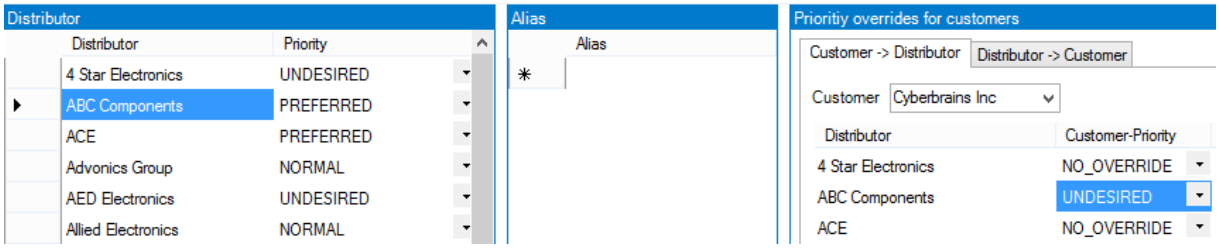
“FourStarElectronics” will now be displayed as an Alias of “4 Star Electronics”.

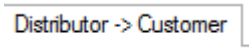


In the right-hand side of the screen you see a section titled:

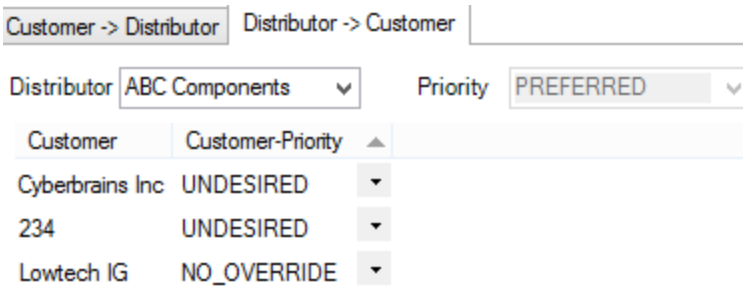


This lets you define customer-specific priority “overrides”. An “override” is simply a case where the priority for a specific customer is different from your priority. ABC Components might be one of your preferred suppliers. However, CustomerA (let us say “Cyberbrains”) has had bad experiences with them so they have specifically prohibited them. So we will define a customer override for this distributor by selecting “ABC Components”, then selecting “Cyberbrains” from the customer list and changing the setting to UNDESIRED.



The option: 

is simply the other way around. You choose the distributor and can set the override per customer.

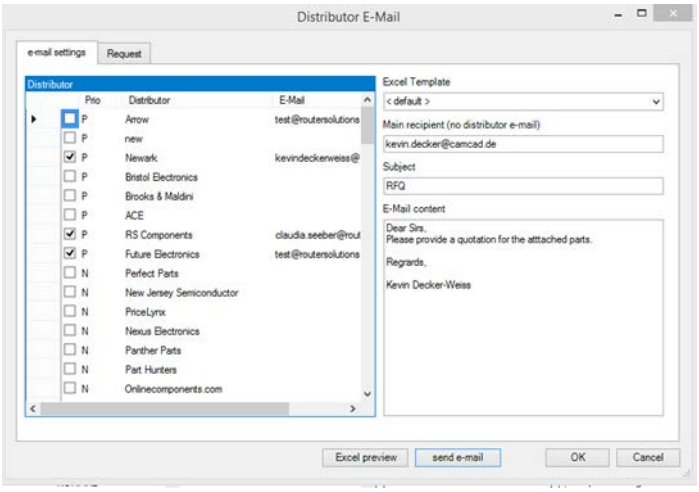


When you have finished making changes, be sure to save the information to the BOM Connector™ database with :

7.4.3.3 Creating a Distributor Request

To create a Distributor Request, click on the button DISTRIBUTOR REQUEST.

This brings up the Distributor Request Dialog:

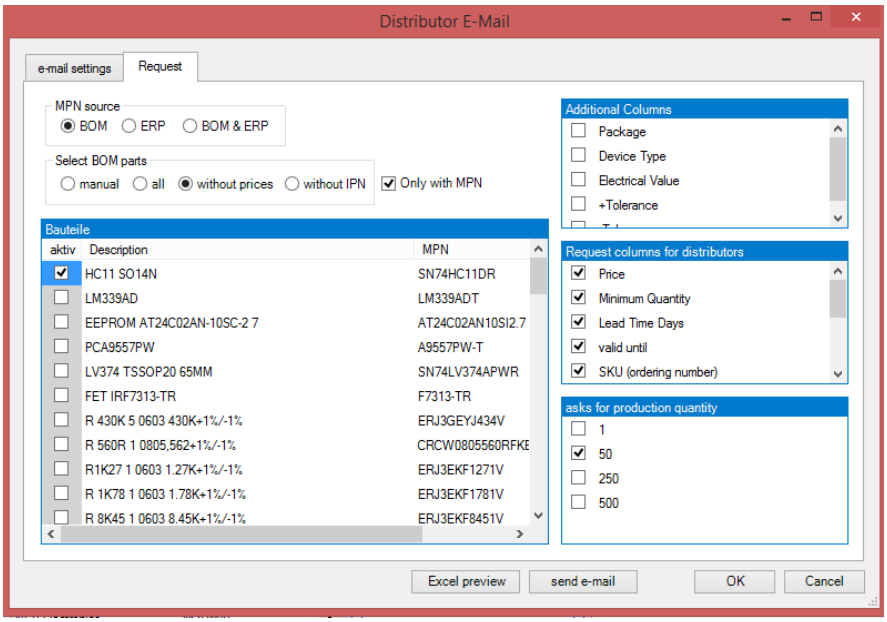


Here you see all your distributors listed. You can sort this list easily by clicking on a column header. Normally, for example, you will want to see all your PREFERRED distributors at the top of the screen. Check the distributors you want to send an RFW to. Once it is filled, you can start "classifying" your distributors into three categories: PREFERRED for distributors you wish you handle first, NORMAL for those with no preference, and UNDESIRED for those you don't want to consider in your quoting.

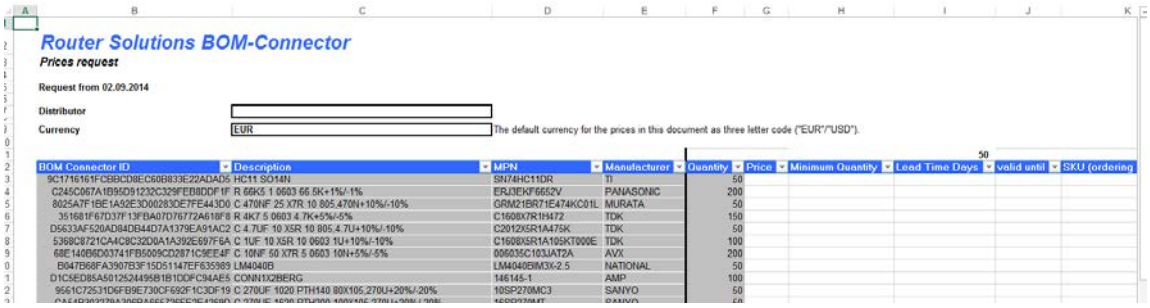
Note, that all distributor emails are visible. You can enter these in the dialog described in the previous section. BC-QUOTE will automatically send out the RFQ via email if this data exists.

To make a Distributor Request, just follow these simple steps:

1. *Note: if you don't wish to use the BC-QUOTE email function you can skip steps 2, 4 and 5.*
2. Select which distributors you wish to email the request to. Simply check the box next to the Distributor Name.
3. Select an Excel Template if you have one. For more information, see the section 5.2.4 Creating a New Template.
4. Give a primary email address which will be the recipient. The entire list of selected distributors will be inserted as "bcc" on the email so that each recipient will not see to whom the email has been sent. The primary email address could, for example, be your own.
5. Enter a subject and standard text for the email.
6. Click on the REQUEST Tab
7. This is where you determine the contents of the request (i.e. what parts to you want prices for and what additional information do you want from the distributor):



8. Select an MPN source – this can be either BOM, ERP or BOTH. Keep in mind that if you haven't assigned IPNs for all CPNs yet, then you will only have MPN information from the BOM.
9. Now choose the parts from the list that you want in the RFQ. You can choose these manually by selecting MANUAL and choosing the parts. You can also simply specify WITHOUT PRICES and all parts that have no pricing information will be inserted into the Distributor Request. If you check "Only with MPN", then only parts that have an MPN (in the BOM or ERP or both, depending on your settings in step 8), will be listed in the Distributor Request.
10. You can select which information (in addition to Description and MPN information will be added to the RFQ by selecting "Additional Columns"
11. You can select what information you want your distributors to fill out by checking the boxes in "Request Columns for Distributors". At the very least you should check "Price", "Minimum Quantity" (in order to establish scale pricing), "Lead Time" and "Valid Through".
12. Specify what your Production Quantity is for the quote. These are the ones you defined previously.
13. Now click EXCEL PREVIEW to see what you are about to generate:



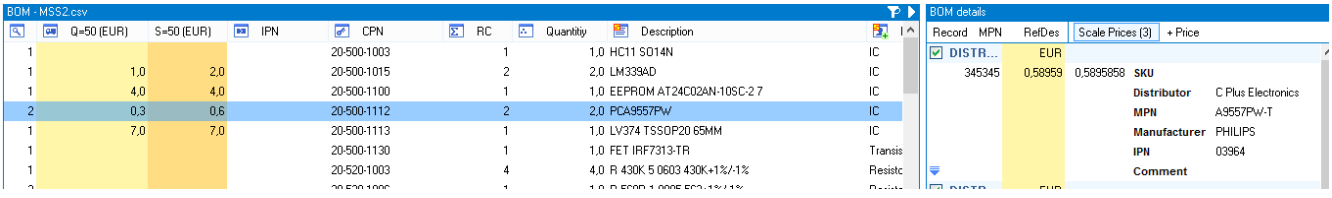
14. If you are going to handle the emailing on your own, simply SAVE the Excel file and email it.
15. If you are going to use BC-QUOTE's email feature, close the file and select SEND E-MAIL. (*Note: do not just hit OK. This registers your settings and closes the window, but does NOT create a Distributor Request.*)
16. You will see an email created with text and subject as you entered earlier. Click SEND
17. Congratulations! You've just created and emailed an RFQ using BC-QUOTE.

Note, that all distributor emails are visible. You can enter these in the dialog described in the previous section. BC-QUOTE will automatically send out the RFQ via email if this data exists.

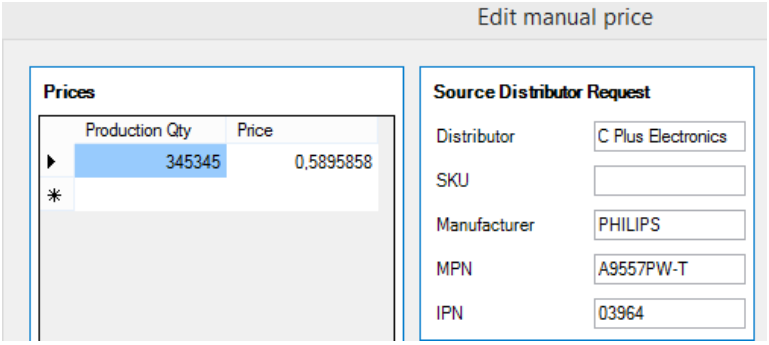
7.4.3.4 Reading in a Completed a Distributor Request

When distributors fill out the Distributor Request and return them, you'll probably need to get this information back into BOM Connector™.

1. From the DISTRIBUTOR Tab, select LOAD DISTRIBUTOR REQUEST
2. Browse to the file you want to read in
3. Select the name of the distributor from where it came
4. Repeat for each returned request
5. That's it!
6. Now check your BOM and you will see the Scale Prices for the parts updated where appropriate:



If you EDIT the Scale Price you will see the source is set to “Distributor Request”



7.5 "QuickPrice"

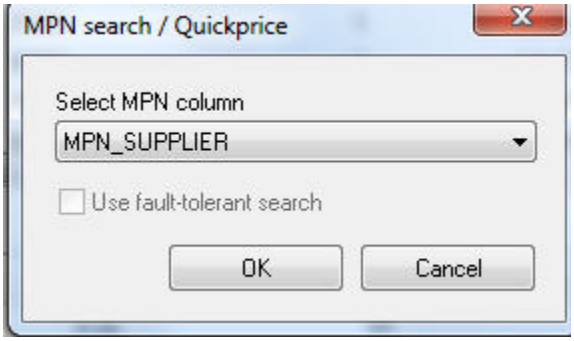
Last but not least, the newest quoting assistant in BOM Connector™ is called "Quick Price". This allows users to get a fast overview of what vendors are currently offering what prices.

Quick Price is a great way to get the latest pricing on any part. The routine looks through all pricing sources - ERP system, Distributor Catalog (via the DCI - Distributor Catalog Interface) and the online portal Octopart™.

How to Use?

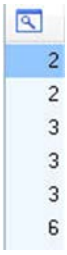
To use this feature, you must have MPNs (manufacturer part numbers) in your BOM. To launch Quick Price just choose it from the search drop-down list and click START (*Note: if it is the first time you are launching it, you won't need to click "START", it will launch automatically*.)

The first dialog asks to identify the MPN field in the BOM:



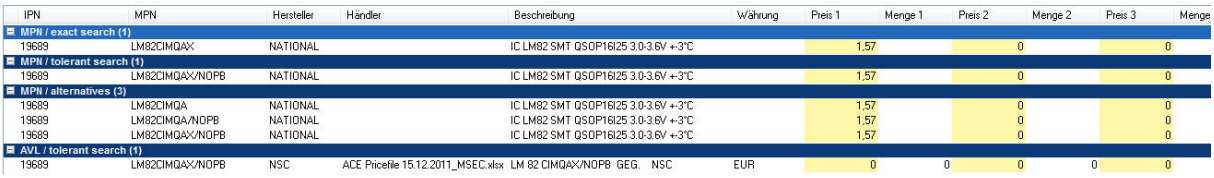
Choose the MPN field in the BOM and click OK.

If you sort the BOM by "Number of results" you will see what part numbers in the BOM have the most matches in the QuickPrice window:



Click on a part in the BOM and you will see the results for that part in the QuickPrice window.

For example, if we choose the result with "6", we can see the following:



IPN	MPN	Hersteller	Händler	Beschreibung	Währung	Preis 1	Menge 1	Preis 2	Menge 2	Preis 3	Menge
MPN / exact search (1)											
19689	LM82CIMQAX	NATIONAL		IC LM82 SMT QSOP16I2S 3.0-3.6V +-3°C		1,57		0		0	
MPN / tolerant search (1)											
19689	LM82CIMQAX/NOPB	NATIONAL		IC LM82 SMT QSOP16I2S 3.0-3.6V +-3°C		1,57		0		0	
MPN / alternatives (3)											
19689	LM82CIMQA	NATIONAL		IC LM82 SMT QSOP16I2S 3.0-3.6V +-3°C		1,57		0		0	
19689	LM82CIMQA/NOPB	NATIONAL		IC LM82 SMT QSOP16I2S 3.0-3.6V +-3°C		1,57		0		0	
19689	LM82CIMQAX/NOPB	NATIONAL		IC LM82 SMT QSOP16I2S 3.0-3.6V +-3°C		1,57		0		0	
AVL / tolerant search (1)											
19689	LM82CIMQAX/NOPB	NSC	ACE Pricefile 15.12.2011_MSEC.xlsx	LM 82 CIMQAX/NOPB GEG. NSC	EUR	0	0	0	0	0	

Where:

MPN / exact search is the result of the MPN found 1:1 in the ERP system

MPN / tolerant search is the result of the MPN found using a method that removes spaces, hyphens and other characters that often are found in an MPN. The new "clean" MPN is then compared with the ERP system (in this case the "/NOP8" has been considered.

MPN / alternates shows other IPNs in the ERP system where this MPN is also used.

AVL / tolerant search shows the pricing from the Distributor Catalog

Octopart™ Search (not shown here) is the result of a search in the online portal Octopart™

8 BC-CHECK

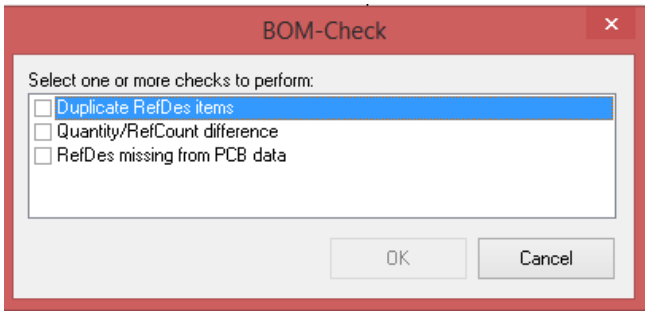
BC-CHECK is used for the following tasks:

- Check the BOM for inconsistencies, such as quantity field which doesn't match the number of reference designators, or BOM parts missing in the CAD file
- Compare two versions of a BOM
- Compare a new BOM with the master BOM in ERP
- Compare a new BOM with the master BOM in MSS

8.1 Checking the BOM for inconsistencies

This is done via the "Check" Icon:

When you hit this, you will see a number of options:



Select the options you wish to check and hit OK:

"Duplicate RefDes Items" will report instances where the same RefDes (i.e. R10) is used more than once in the BOM.

"Quantity/RefCount difference" will compare the Quantity field in the BOM (provided you mapped correctly during the BC-IN process) with the calculated number of reference designator (the RC field).

"RefDes missing from PCB data" will list all components in the BOM that are not in the CAD data. (see Chapter 9 BC-CAD, page 52).

For example, with the MSS.CSV file loaded, select the second option "Quantity/RefCount difference" and hit OK.

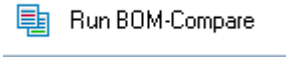
You will see a new column inserted into the BOM:

IPN	CPN	RC	Quantitiy	RefList	BOM-Check	Description
1	20-500-1113	1	1,0	U75		LV374 TSSOP20 65MM
1	20-500-1130	1	1,0	Q7		FET IRF7313-TR
1	20-520-1003	4	4,0	R183, R184, R185, R186		R 430K 5 0603 430K+1%/-1%
3	20-520-1006	1	1,0	R264		R 560R 1 0805,562+1%/-1%
1	20-520-1007	3	4,0	R268, R269, R271	QtyMismatch	R1K27 1 0603 1.27K+1%/-1%
1	20-520-1008	1	1,0	R306		R 1K78 1 0603 1.78K+1%/-1%
1	20-520-1018	1	1,0	R326		R 8K45 1 0603 8.45K+1%/-1%

Check CPN 20-520-1007. BC-CHECK has reported that although the Qty field in the BOM specifies "4", there are only three reference designators (R268, R269, R271). So there is a mistake in the BOM.

8.2 Compare two versions of a BOM

To compare two BOMs you must first save them in CSV format.

Then choose  from the Action Menu.

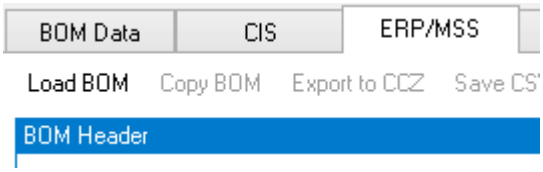
Choose BOM1 and BOM2, then choose a key field (this is normally either Reference Designator or CPN/IPN).

You will see a report showing all entries that are the same (green) and all differences (yellow) as well as all new parts (white). To make it easier to read, turn of the parts which are the same by clicking on the “turn off =” box.

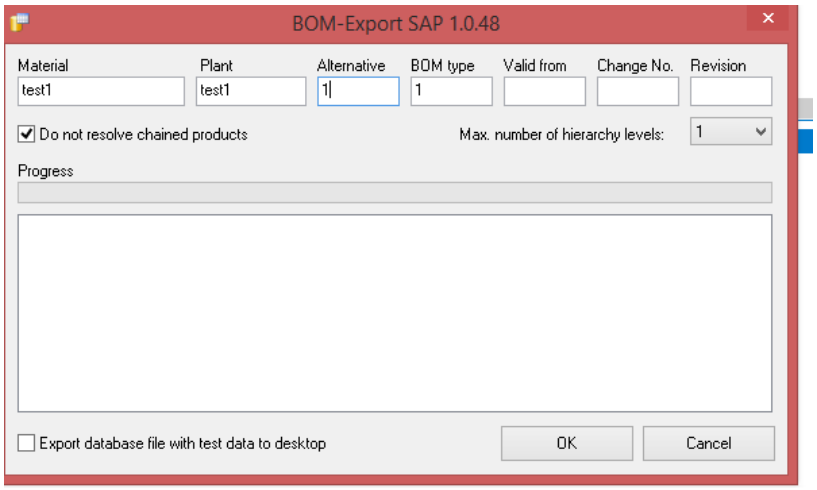
- Compare Compare a new BOM with the master BOM in ERP

8.3 Compare a New BOM with the Master BOM in ERP

To run this, you need to have the “BOM from ERP” feature activated as part of the BC-EXCHANGE module (See Chapter 10). If this is the case then you can choose the ERP/MSS Tab and hit LOAD BOM option:



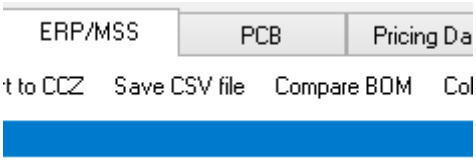
This will bring up a dialog. Here you can enter the project number in the ERP system as in this sample from SAP (note: this dialog will vary depending on your ERP system used):



Hit OK and this will bring up the BOM.

Now import the new BOM as described in the Chapter 5 : BC-IN/OUT.

From the ERP/MSS Tab choose COMPARE BOM



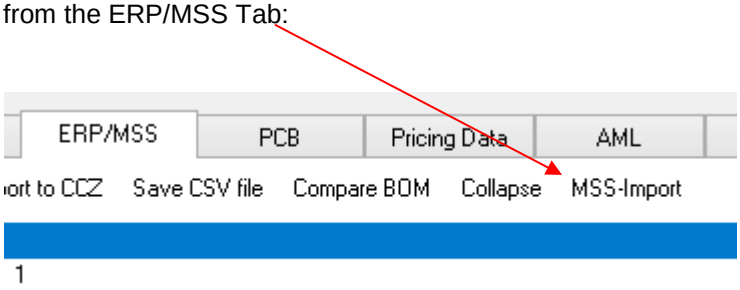
Changes to partnumbers (IPNs) or reference designators are shown with a red “X” mark:

5.40.554.050/0000	1	0001	1	
5.93.010.138/0000	4	0001	1	C1
5.93.010.138/0000	4	0002	1	C2
5.93.010.161/0000	7	0001	1	C14
5.93.010.161/0000	7	0002	1	C37
5.93.018.803/0000	8	0001	1	C15
5.93.016.424/0000	9	0001	1	C17
5.93.016.402/0000	11	0002	1	C41
5.93.016.402/0000	11	0003	1	C308
5.93.016.402/0000	11	0001	1	C32
5.93.010.169/0000	12	0001	1	C33
5.93.010.178/0000	15	0001	1	C39
5.93.010.178/0000	15	0002	1	C40
5.93.010.178/0000	15	0003	1	C401
5.93.010.178/0000	15	0004	1	C403
5.93.010.178/0000	15	0005	1	C405
5.93.010.143/0000	16	0002	1	C51

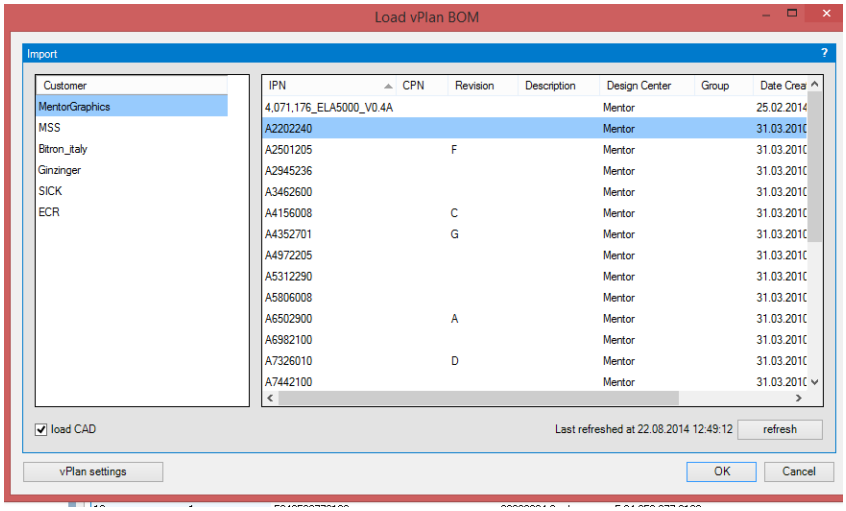
8.4 Compare a New BOM with the Master BOM in MSS

This is very similar to the step described above, except that it does not require the BC-EXCHANGE module. It does, however, require you to install the MSS Process Preparation (vPlan) plugin delivered with the BOM Connector.

If this has been successfully installed into your ADD-IN repository, you can choose MSS IMPORT from the ERP/MSS Tab:



Clicking on this will bring up the MSS Dialog:



Here you see a list of all your ASSEMBLIES. Simply choose the one you want to import. If you click on LOAD CAD at the lower-left, you will also import the CAD file (see Chapter 9: BC-CAD).

Once the BOM is loaded, you can compare it with the BOM loaded in the BOM Tab by choosing COMARE BOM. The result is shown the same as described in 8.3, above.

9 BC-CAD

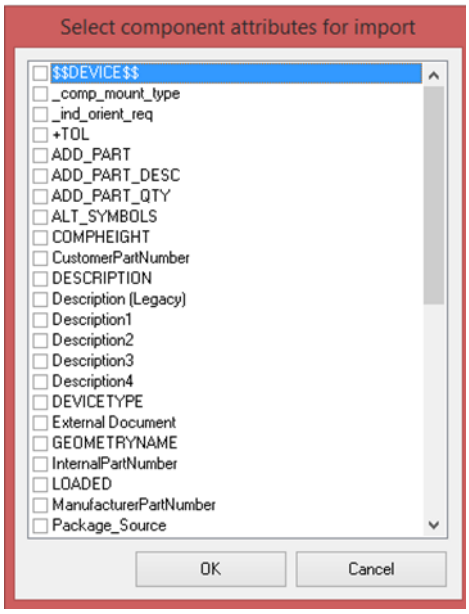
Use BC-CAD to directly load CAD Data and insert the information into your BOM.

CAD data must be either in a .CCZ Format, or, for users of MSS Process Preparation (vPlan) you can extract the data directly from the database.

There is a sample .CCZ file available called VPLANASSEMBLY.CCZ. It is located in TESTFILES. You

can load it either via the PCB tab – “Load File” or via the icon:

If you use the CAD-Link icon you will get a list of attributes:



This lets you select various attributes to insert into the BOM. If you do not wish to insert the attributes into the BOM simply leave all unchecked and hit OK.

The PCB is now visible in the PCB Tab.

Under **CAD Items** you can select Components, Nets or Test points. You will see a list of all items. Simply double-click to zoom into it.

Zoom 1:1: This will show the entire board.

Flip: This lets you switch between TOP and BOTTOM views.

SMD Displays all SMD parts in yellow

THT Shows all THT parts in grey.

Note: If you right-click on a part in the PCB view and shows „SHOW IN BOM“ you will jump to the BOM view and that part will be displayed. Alternatively, from the BOM Window you can select a part, right-click and hit SHOW IN LAYOUT. The view will switch to PCB and the component will be shown.

10 BC-EXCHANGE

Use BOM/ERP to directly load BOMS from your ERP system into CAMCAD or vPlan. For this to work, Router Solutions must configure a so-called “EBX” module. Once configured, you can read BOMs directly from your ERP system into either the BOM window, or especially into the ERP/MSS window, depending on which one you have activated before running it.

For questions, please do not hesitate to contact Router Solutions technical support.

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